

M I N I M A L T U B E R C U L O S I S

A Discussion of Assessment,
Prognosis, and Treatment,
based on 64 cases.

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I N T R O D U C T I O N .

With the development of mass radiography Pulmonary Tuberculosis is being diagnosed at an earlier stage in a higher percentage of cases, and as a result the problem of the " Minimal" lesion has become a very vital one. Once it has been decided that a lesion must be considered tuberculous, it is the question of its activity, prognosis, and treatment that is of importance. More and more the difficulties and limitations of our methods of assessment of the activity of small lesions are being realised. The problems of prognosis and treatment are perhaps easier to solve once the degree of activity of a lesion has been assessed, but here there are also many differences of opinion, especially regarding the advisability of collapse therapy and the optimum time for its introduction.

I propose to discuss these problems, basing my observations on 64 cases of minimal tuberculosis which have been followed up for from one to five years. Various other questions which arise out of the discussion of these problems will also be referred to.

For the purpose of this discussion Minimal Tuberculosis is defined as by the National Tuberculosis Association of America.

The cases in this paper are a selected group in that they are all females aged from 15 to 40 years of age, mostly from the lower income groups. The majority of them were patients sent to the

sanatorium wards of Law Hospital, Carlisle, Lanarkshire, by the Tuberculosis Officers of the West of Scotland, during the years of 1942 to 1947. The others were nurses and patients seen in the general wards of the hospital. As such, these cases are not representative of minimal cases in general, for the following reasons : Only a few were diagnosed by miniature mass radiography or routine radiography, most of them had been examined because of a history of contact with an active case, or because of the presence of symptoms. Furthermore, they had been selected in that they had been considered active by an experienced Tuberculosis Officer who had recommended their admission to a sanatorium.

I hope to prove in this paper particularly two points :

- 1/ The need for close and prolonged supervision of the minimal lesion, whatever its nature, and
- 2/ the need for early consideration of collapse therapy.

Even this small series of cases seems to me to be illustrative enough to point these lessons.

Definition of Minimal Tuberculosis.

The National Tuberculosis Association of America /1940/ defines Minimal Tuberculosis as follows: Slight lesions without demonstrable excavation confined to a small part of one or both lungs. The total extent of the lesions, regardless of distribution, shall not exceed the equivalent of the volume of lung tissue which lies above the second chondro- sternal junction and the spine of the fourth, or body of the fifth, thoracic vertebra on one side. This refers to the reinfection phase of tuberculosis.

It is obviously important to have a clear definition of the term "Minimal Tuberculosis" and this one appears to be the most widely accepted in the Western hemisphere and Great Britain. In studying the literature, it soon becomes clear that especially continental workers have made no attempt to define minimal or early lesions, and thus much of their work is not comparable with that of workers who have defined their terms. The same must be said about earlier work from English speaking countries, done before exact definitions were made.

Daniels et al. /1948/ in the Proffit Survey define Minimal Tuberculosis as follows: If the radiological shadows occupy not more than the area of two intercostal spaces. The upper lobe apex is estimated as an intercostal space. Lesions with cavitation are excluded, as well as primary lesions.

This appears to correspond fairly closely with the American classification.

In considering this definition, it is important to note that lesions with cavitation, however small they may be, are excluded. Any early lesion with cavitation is obviously active and requires treatment, and therefore the problems about to be discussed do not on the whole arise in these cases. The definition includes bi-lateral lesions provided that their extent falls within the limits laid down; this is important, especially as some of the earliest lesions seem to involve both apices.

Minimal does not, of course, always mean early or incipient, it may be old and obsolete. The extent of a lesion gives no indication as to its age.

The terms "arrested" and "quiescent" are used as defined by the Ministry of Health.

The Increasing Importance of Minimal Lesions.

Up to the nineteenthirties most papers on Pulmonary Tuberculosis concerned themselves with the moderately advanced and advanced case. Even so-called early cases were mostly past the minimal stage. The reason for this is clear, most patients only sought advice when they had obvious symptoms, and this meant, that they had usually passed the minimal stage.

During the nineteentwenties and thirties the standard of radiology improved very much, and at the same time, many physicians started to X-Ray patients' chests as a routine measure when in hospital or when examined for other than chest complaints. Later mass radiography, at first as screening, or full-size radiography, then by miniature photography, was introduced, and minimal cases were seen in ever greater numbers. One of the first mass X-Ray investigations by Wingfield and MacPherson /1936/ with full-size films, found 1.08% with tuberculous lesions. Later reports by Brooks /1943/, Trail /1942, and 1944/, Pierson /1945/, and Tovey /1947/, dealt with mass miniature radiography mainly in factory and office workers, and recruits to the Services. Trail /1944/ was able to give results of 250,000 examinations with 0.77% of males, and 0.94% of females showing lesions due to the re-infection type of Tuberculosis. Pierson /1945/ reports on one million recruits X-Rayed for the

American Forces, and of these the astonishing percentage of 2.4 were declared unfit because of Tuberculosis, half of them active. This number obviously refers to all types of lesions including primary ones, and also includes large numbers of coloured men. 36 to 70% of these cases discovered by mass radiography by different observers were minimal. From these figures, one can get an idea of the magnitude of the problem.

But even apart from mass radiography the number of minimal cases discovered is rising. Novak /1945/ found that of all cases of tuberculosis discovered in recent years 62% were of minimal extent.

A great number of these minimal lesions are of course inactive but many of them are of doubtful or definite activity. It was soon realised that often it is impossible to decide at one examination whether a lesion is active or inactive. Many of these patients have no symptoms or physical signs, and one realised that they require intensive investigation and observation before the degree of activity of their lesions can be assessed.

The difficulty of this problem is, however, often not sufficiently stressed or realised. Thus we read in the M.R.C. publication on Mass Miniature Radiography of Civilians /1945/ that "persons with newly discovered tuberculous lung lesions requiring no special action /e.g. old, apparently healed lesions, negative clinically/ can be dismissed forthwith, possibly with a letter of information for the G.P. for his records." A few pages further on it is stated " With increasing experience it should be possible to

class most cases after a single examination as for either observation or treatment".

These paragraphs seem to suggest that we can in many cases state from the examination of one X-Ray film whether a lesion is active or not. This statement seems to me very dangerous and conflicts with the experience of most workers as well as my own in the cases studied here.

Methods of Assessment, the History.

The first thing to consider, as in all medical investigations, is the patient's history. A medical history deals mainly with symptoms and it is the question of the presence or absence of symptoms in minimal lesions that must concern us first. The most conflicting statements are still being made on this problem. Recently Stradling /1948/ wrote : "The figures given show that a definite symptomatology is present in practically every active case", and went on to quote Fishberg that there is no active phthisis without constitutional symptoms. Most of the work done in recent years shows that these statements are not consistent with the facts and may be very misleading .

One point to remember is that the figures arrived at vary to a great extent with the type of case selected. Figures drawn from those attending hospitals or chest clinics are going to be heavily weighted in favour of the presence of symptoms, as most of these patients go to the doctor because of symptoms or as contact cases. Those discovered by mass radiography will give a truer picture, but this may be weighted the other way, as most surveys are done on apparently healthy young adults, and many of those with symptoms may be missed because they were off work or, in the case of recruits, were previously rejected for service. Others may have evaded the examination because of fear of the disease and its consequences.

The selection of cases probably explains the conflicting figures of Stradling /1948/ who found that of 345 active cases 99% had symptoms, and Reisner /1948/, in whose series of 344 incipient cases only 22% had symptoms. Simon /1943/ and Phelps and Edson /1943/ would agree with Reisner in stating that most cases of minimal disease are symptomless, while Bobrowitz and Dwork /1946/ and Abeles and Pinner's /1944/ figures support Stradling.

The cases considered in this paper are in many ways selected, in that only 10 of them were discovered by routine radiography, five of these again being sanatorium nurses. Most of the others had been first seen as contacts or because of symptoms. But even in this selected group, twelve out of 64, i.e. 18.8%, had no symptoms. Three of these were definitely active, two of them being the only cases that ended fatally. /Case No. 48 and 49./ Another seven of the twelve were of low activity, and only two were definitely inactive.

When comparing these figures, one must of course also take into account the thoroughness with which the histories are taken. Only too often the patient is asked only generally for symptoms and will not mention complaints which seem to her trivial, unless specially asked for. I found that it is necessary to ask leading questions concerning lassitude, tiredness, loss of weight, and cough. Particularly in the case of cough is this too often made light of or ignored, the patient will dismiss it as a smoker's cough or clearing of the throat in the morning.

The twelve symptomfree cases admitted to absolutely no abnormality, even on the closest questioning. Many of the others only had very slight symptoms. Table I gives an indication of the type of symptom found in this series. It will be seen that cough was the most frequent symptom, but since it includes even the slightest cough it can be argued that in some of the cases it was not due to the lesion, but due to an accompanying bronchitis or pharyngitis.

Lassitude was also frequent, but this again is a rather vague symptom and entirely non-specific, it may be due to anaemia or other causes in some. Loss of weight and pain was found in 15 cases each, and this seems to me a rather higher figure than one would expect. Haemoptysis must, of course, always be considered a sign of activity, and so must usually loss of weight, if one can be sure that there is no other cause for it. In the case of pain one must take into consideration the time interval between its occurrence and the time of examination. It cannot be taken as implying activity at the time of consideration of the case. Digestive symptoms, malaise and other minor symptoms were comparatively rare.

36 patients had more than one symptom. This, and the fact that eight cases had a history of haemoptysis, and three of slight staining, indicates the highly selective nature of these cases. This is further emphasized by the fact that of the ten picked up by routine radiography, nine had no symptoms, only two of them being definitely inactive.

In this rather selective series of cases therefore the presence of symptoms was of definite help in the assessment of activity in many cases. None of the inactive cases had symptoms, and 52 out of 62 definitely or doubtfully active cases did have symptoms. However, this is not the general experience. According to Reisner and Downes /1945/, there is no necessary correlation between activity and symptoms. This was confirmed by the Prophit Survey in which few of the re-infection cases had symptoms, but is obviously not supported by the findings in this series.

Race, Sex, Age, Heredity, Environment.

There is no doubt that the consideration of the race, sex, and age of the patient are important in the assessment of a case of Tuberculosis. All American workers agree that a minimal lesion in a coloured individual is of much graver significance than in a white person. As far as Great Britain is concerned, it appears that the Irish and people from the Highlands of Scotland are more likely to develop progressive disease. The Prophit Survey /1948/ showed that the positive Mantoux rate was lower in Irish and Scottish nurses, but that once infected, they were more liable to get progressive disease.

Many of the patients in this series are of Irish stock, but all of them were brought up in the slums of Glasgow and Lanarkshire, and it is impossible to separate factors of race in such a small series from socio-economic ones.

In female patients, the age from 15 to 25 years is the most dangerous one. In this series, most patients were in the most susceptible age groups, 25 /39.1%/ were between 15 and 20 years old, 28 /43.7%/ between 21 and 25 years, and only 10 /15.6%/ were over 25. There is no doubt that in such young girls one must view a minimal lesion with more concern than in the older patient, and it is more likely to be active, as it is more likely to be recent. However, Reisner /1948/ and others have shown that incipient lesions may even occur over 30 years of age, in Reisner's series in 17% of cases.

Of the ten patients over 25 years, three, aged 26, had definitely early active lesions, the others, with the exception of one patient, had well defined lesions or re-activation of old lesions. The one exceptional patient /case No.31/ was aged 36, and had an early exudative infra-clavicular lesion, thus confirming Reisner's experience.

The importance of the hereditary factor has been definitely established by the investigation of Kallmann and Reisner /1943/ on twins, and also by Puffer's /1944/ work. The Prophit Survey also showed the importance of the genetic factor. In the individual case, this hereditary factor cannot easily be separated from the contact factor, as in most cases the patient with a positive family history is exposed to contact in her family.

Of the 16 patients with a positive family history in my series, only four had no known contact with the diseased members of the family. Other eight patients had close contact with positive cases, either as nurses or in the husband, close friend, or fiancé. In all the other 40 patients, no family history or history of contact could be elicited. It is well known, however, that especially in wartime in industrial areas, the possibilities of infection were high due to overcrowding in houses, transport, and at work, contributed to by black-out precautions.

It is the general experience that in patients with a positive family history or a history of close contact with an active case, the lesion is more likely to be active, and the prognosis

worse. From this point of view, therefore, this factor is of importance in assessment.

In the respect of socio-economic factors again, this was a selected group of patients in that, with the exception of the nurses, the patients came from the working classes of the West of Scotland, where housing conditions are notoriously bad, though, on the whole, the financial position of many of the families was perhaps better during the war years and after, than before the war. Most of the patients went out to work themselves, even though many were married. But housing conditions were very bad.

18 /28.1%/ of the patients shared a bed with sibling or parent. 32 /50%/ others shared a room, but had their own bed, and only 14 /21.9%/ had a room of their own, six of these were nurses who came from more satisfactory homes. In many cases up to five people lived in one room, or up to ten in two apartments in tenements in Glasgow.

The diets of many of these patients also had been very unsatisfactory, perhaps not so much for economic reasons or shortage of food, but due to bad feeding habits and lack of education in these matters.

That these factors of genetics, family history and economics are not the only ones, is brought home by one of the fatal cases, /case No.49/, an only child of a fairly well-to-do Scottish family with satisfactory housing conditions, and with a negative family history.

Physical Signs.

The presence of physical signs can be of very great help in the assessment of cases. The most frequent sign is the presence of a few fine crepitations over the site of the lesion, and when these are heard the lesion must be considered active. Sometimes the moist sounds can only be brought out as post-tussive crepitations.

In this series, 29 patients /45.3%/ had positive physical signs, most of them consisting of crepitations, but a few of the loss of movement, diminution of percussion note, or slight wasting over the upper zone involved.

It is obvious that, though more than half the cases had no physical signs, their presence was a great help in assessment. In other series, especially those found by mass radiography, physical signs were found much less frequently, and it may therefore well be, that they are of help in only a few cases in a really representative cross-section of minimal lesions. Puelma and Grebe /1945/ found physical signs in only 11% of 110 cases. It must also be stressed that my patients were in hospital and were examined more than once, before and after consideration of the X-Ray picture.

Other points in the examination of the patient are the general condition, the presence of anaemia, etc. In this series, these factors were actually of very little help. The two eventually fatal cases were considered to be in good general condition when first seen. As pointed out before, most of the patients came from the slums of

Glasgow and Lanarkshire, and in many of them the general condition was very poor, but this had no relation to activity or prognosis.

After the physical signs, the importance of temperature and pulse records has to be considered. It is obvious that these are only of value if taken in hospital under standard conditions and over a definite period of time, if possible four-hourly. Though this can be carried out in a general hospital, in a sanatorium, due to shortage of staff, it is, unfortunately, often impossible. In this series, therefore, the temperature was only taken night and morning. Though at a later stage many sanatorium patients can be entrusted with the recording of their own temperature, it is clear that during the first few weeks after admission to hospital the temperature and pulse readings must be taken by a competent nurse. In most sanatoria, temperatures are taken rectally or orally. I do not here wish to enter into the controversy over the best method, it is however important to state which method is used.

In this series, mouth temperatures only are recorded, and any rise above 98.6 degrees Fahrenheit is considered abnormal. It was, however, found that if at any time the temperature rose above 98.6 degrees, it usually also at some time reached 99 degrees or higher. 32 cases /50%/ had a temperature above 99 degrees Fahrenheit, on one or more occasions during the first fortnight in hospital. I have no doubt that with stricter control, that is four-hourly readings, a still higher percentage would show abnormal results.

None of the inactive cases had a raised temperature at any time.

Pulse rates were found far less reliable, though one saw the occasional case where there was a tachycardia without rise of temperature. On the whole, pulse rates were normal in very active cases. But as has been pointed out in recent articles and correspondence, often very little reliance can be placed on routine pulse records, unless the nurses are specially supervised and made aware of their importance.

The Sedimentation Rate and Blood Picture.

The sedimentation rate was at one time thought to be a very valuable guide in the assessment of activity, and there is no doubt that it can be of help when it is raised. But only too often in the minimal cases it is perfectly normal even in the presence of obvious activity. In this series also in 25 cases /39.1%/ the E.S.R. was never raised, 16 of these were definitely active, and only two definitely inactive. As all cases were female, the upper limit of normal is taken as 10 and 20 mm /Westergren/ in the first and second hour respectively. Similar results were reported by Bobrowitz and Dwork /1946/ and Abeles and Pinner /1944/, who found the E.S.R. misleading in from 20 to 45% of cases. Stiehm /1940/ even found it normal in 90% of early cases.

However, in those cases where the E.S.R. was initially high it often fell gradually to normal as the disease was controlled, and in others it rose when the disease was rapidly progressive. In such cases, therefore, it was of definite value.

The blood picture has in the past often been considered to be of great help, and differential leucocyte counts with various elaborate indices were worked out, such as the Schilling, von Bonsdorff, and Medlar /1929 and 1935/ indices. The latter is still used by some people in America, such as Stiehm /1940/ and Crawford /1935/, but even these authors do not mention its use in minimal lesions, and

Medlar /1935/ himself admits that it is of no value in early cases. Hendricks /1945/ is another worker who still uses complete haemograms, in his case a Schilling haemogram, but when one reads that he also advises a Prothrombin, Vitamin A, and Vitamin C estimation in every case, one realises that he must overestimate the value of such laboratory tests.

Most other workers who have considered the problem are agreed that nothing can be learned from a differential count in the majority of cases, that cannot be learned from an examination of the patient, the temperature chart, and the E.S.R.. Abeles and Pinner /1944/, Bobrowitz and Dwork /1946/, and Clive /1943/ all found blood counts of no help in minimal cases. Stobie et al. /1942/ report after a full investigation that no factor in the blood count could be used in any way for immediate or long term prognosis.

At the beginning of this investigation, I carried out full leucocyte counts on all patients, but found that they gave normal pictures or deviated from normal rather when the patient had an intercurrent infection, like a common cold, than with the degree of activity of the lesion. Even in the most active cases in the initial stages there was no abnormality of the white count. Once an abnormality was noted, there was always definite evidence in the X-Ray film and the temperature chart to indicate it. As most other workers have come to the same conclusion as regards blood counts, I only carried them out in especially difficult cases later, but

again did not find them of any help. For this reason, I have not given the figures in my notes on the cases, they would be completely meaningless, and only confirm well-known facts.

The Search for Tubercle Bacilli.

The next most important part of the investigation of any patient is the search for Tubercle bacilli. It is generally agreed that the finding of Tubercle bacilli in sputum or air passages is an indication of activity, though one or two authors maintain that even an inactive lesion can occasionally discharge a few Tubercle bacilli, /Decker et al. 1943, and Pinner and Werner, 1928/. This is a very important point and one comes from time to time across a patient, who by all known criteria has an inactive lesion, but who perhaps on one occasion has a positive gastric lavage or sputum culture. Perhaps these findings can be accounted for by the fact that even in the best laboratories errors can occur.

All are agreed that the search for Tubercle bacilli must be thorough and systematic. The results obtained in minimal cases vary very much. On the one hand we have Overholt and Wilson /1946/, who state that over 99% of active cases are positive if properly studied, and on the other hand Reisner /1948/, who found only 20% positive. Abeles and Pinner /1944/ and Decker, Ordway and Medlar /1943/ found about 70 to 80% of active minimal cases positive. In the Prophit Survey of 97 minimal cases 19.6% had a positive sputum, but the search was not thorough.

In this series, the routine has been as follows: When sputum was present, ten consecutive 24 hour specimens were sent to the laboratory. If still negative, the next specimen was concentrated

by the modified Petroff's method /Mackie and McCartney, 1942/ and cultured, as well as a film of the concentrate examined. Films were made in the ordinary way and stained Ziehl-Neelson, decolorising with acid and alcohol. A really thorough search of each slide was made and 15 to 20 minutes was spent on it. This is the time usually mentioned as being necessary to search a smear, but in few laboratories is it possible to find the time for such prolonged searches of each slide. As I was myself in charge of the laboratory for the greater part of this investigation, I was able to ensure that these details were observed.

Guinea pig inoculation was not carried out, except in a few cases, as this method of examination was not readily available, and it was felt that cultures should give as good a result, particularly with pooled sputum well concentrated, and a control with every new batch of culture medium. In fact I found that, due to the thorough search of smears, especially also of concentrated smears before culture, we were able to find the Tubercle bacillus almost as frequently as by culture, and only two of the cases were positive by culture only.

If no sputum was available, gastric lavage was carried out on three occasions, the sediment was concentrated, examined, and cultured. Laryngeal swabs were used in a few cases only during the later part of the investigation.

The importance of gastric lavage has been stressed by many workers, such as Oyama /1940-41/, Decker et al. /1943/, Roper and Ordway /1941/, and Towey /1947/, the latter claiming very good results. Many writers point out the importance of observing certain details in the method. Towey /1947/ and Vincent and Binge /1947/ stress that the specimen aspirated must be examined and put up for culture within 24 hours, as after this the Tubercle bacilli soon die. Overholt and Wilson /1946/ point out the importance of confirming the positive results by culture, as other acid-fast bacilli are sometimes found in gastric juice. In only one case did I find Tubercle bacilli by gastric lavage when they had not been found in a direct smear before.

This low positive result in this series may be partly explained by the fact that patients, who had no sputum were given an expectorant mixture to stimulate sputum production, and also that few patients swallowed their sputum, as we found that rather than disappoint the nurses collecting the sputum containers, the patient would expectorate saliva.

Recent reports are enthusiastic about the use of laryngeal swabs, and extensive use of this method might have given higher results. Recently a further method of investigation has been mentioned, that of bronchial lavage, /Bueno /1946/. Though its originators claim it to be harmless, I cannot convince myself that this is so. If there are Tubercle bacilli present, they are

bound to be washed into all parts of the lung, and may thus lead to a spread of the disease. I feel that it is irrelevant to state that it has not been reported so far, even the most conscientious physician would hesitate to publish the fact of a spread having occurred.

In this series, there were only 16 cases with a positive sputum. That is 25% of all cases and 29% of the definitely active cases. This is lower than has been reported in most other series of minimal cases. The figures of Reisner /1948/ and Bobrowitz /1942/ are perhaps most comparable with these results. One must take into account the fact that the majority of these cases did not have any sputum at any time.

Before going on to consider X-Ray appearances, it is interesting to note, that in this series all the definitely active cases had either symptoms, signs, a raised E.S.R., or a positive sputum. Of the doubtfully active cases, however, six had completely negative findings /see table 2/, as had the two inactive cases. Therefore it is clear that it is of great value to take a full history and to carry out a careful examination of the patient.

Radiological Appearances.

When all these points have been considered, it must be acknowledged that X-Rays are the most important and reliable means of assessing the activity of a lesion, and I mean serial X-Rays. To understand fully the X-Ray appearances and their significance, we must first discuss the pathology of the minimal lesion.

The lesion arises as a small broncho-pneumonic area at first involving a few alveoli, giving a faint smudge with indefinite outline in the X-Ray picture. If the lesion is exudative, it may increase in size with a very indefinite outline. If it is productive, the outline will be sharper and the lesion eventually consists of a well defined round focus. These foci are usually single, but there may be two or three of them. If this lesion is larger, it is usually sub-apical in situation, and near the surface of the lung in the upper posterior segment, /Amberson, 1945/, /Kayne, Pagel, and O'Shaughnessy, 1942/. In other cases, there may be at the beginning the appearance of multiple smaller irregular spots, usually more in the apical region. Pathologists have argued for a long time which of these lesions are the earlier ones, the multiple small apical foci, or the larger sub-apical infiltrate, the "Frueh-Infiltrat" of German authors. What is often called the

"Old Theory" considered the multiple small irregular foci to be the initial lesion, "Initial Foci", and when there was a larger infiltrate present, considered it secondary to this lesion. This theory was recently confirmed by Malmross and Hedvall /1938/ in their investigation into incipient Tuberculosis.

According to the "New Theory" of pathologists, the single infra-clavicular infiltrate, "Frueh-Infiltrat", is the initial lesion. There is no doubt that both these types of lesions are the predominant types in the minimal cases, and the important fact to realise about these lesions is that they may progress rapidly, in the course of a week or two, or may remain in the same condition for months or even years, only to extend suddenly. This is confirmed by Malmross and Hedvall /1938-39/, as well as by the Prophit Survey /1948/, and other work. In other cases, the lesions are absorbed after months or years, or become hard and well defined.

A type of lesion more rarely seen is the circumscribed homogenous opacity with fairly well defined margins, sometimes termed Assmann's Focus.

Reissner and Downes /1945/ have classified the lesions more elaborately, and their classification can be of help in assessment. They divide their lesions by radiological appearance into: 1/ exudative, 2/ productive and fibrotic, 3/ exudative and productive, 4/ fibro-calcific, describing their radiological appearance in detail. But one must not forget that even fibrotic and

fibro-calcific lesions can break down.

As all these lesions are small in the early stages, it is important to have good X-Rays. Many of the smaller lesions may be missed by mass radiography. Trail /1944/ points out that among 250,000 cases mass X-Rayed, twelve cases were known to have been missed. There may have been many others about whom we know nothing. The X-Rays must be full-size films of good quality. Often special apical projections are necessary to throw the shadow of the clavicles and ribs away from the lesion. Some workers recommend oblique views as well as lateral views, /Amberson 1945/. Others, especially in the United States, suggest stereoscopic pictures, Hendricks /1945/, Brown /1928/, Overholt and Wilson /1946/.

Some authors have placed great emphasis on the site of the lesion as a guide in assessment, but there is by no means agreement on this. The majority of lesions are found in the apical or sub-apical region, as discussed above. This applied also in this series, /see table III/. There were only eleven cases with lesions in the mid- or basal zones. The right side is a more frequent site than the left, in this small series the difference was only very slight, 31 right-sided against 29 left-sided and 3 bi-lateral cases. Most authors, e.g. Amberson /1942/, consider that the infra-clavicular lesion is more dangerous than the supra-clavicular one, however this was not so in Malmross and Hedvall's /1938/ and Simon's /1943/ series, who found that the homogenous isolated infiltrations /Früh-Infiltrat/ had a better prognosis, and this lesion is usually sub-apical.

All are agreed that the apical multiple foci may also be very dangerous and that they often precede the infra-clavicular lesions.

Pathologically, this series illustrated well the different types of lesions seen. /See table IV/. 16 cases /25%/ showed multiple small apical foci, some of them extending to the second inter-space. One of these cases was progressive, but all the others improved satisfactorily, 13 being arrested or quiescent at the end of the investigation.

The exudative, fluffy infiltrates, roughly corresponding to the continental "Frueh-Infiltrat", of which there were 23 /35.9%/, were with two exceptions in the infra-clavicular or clavicular area. Their progress was not quite so favourable. One of these cases died, one progressed, and two were unchanged. Six, though improved, were not quiescent at the end of the investigation. The other 13 were arrested or quiescent. This confirms the impression of most workers about the greater danger of the sub-apical lesion, but the occasional virulence of the apical ones. It is interesting to note that some of the cases with sub-apical infiltrates also showed multiple small apical foci, which seemed to be older, supporting the old theory of the apical origin of the disease.

The smallish round well-defined lesion, considered productive, of which there were seven cases, did well, as one would expect, all except one being arrested or quiescent, and the other one improved. There were also three larger, but well-defined productive lesions which all became quiescent.

Eleven cases had the appearance of fibrosed lesions, being streaky, hard, and partly calcified. One of these however, /case No.48/, broke down in the course of a year and spread rapidly, leading to death. As there was however no X-Ray for about 12 months it is impossible to say whether it was this lesion which broke down or whether re-infection occurred.

There were three other cases which cannot be classified, as they show mixed lesions.

Thus this small series illustrates all the different types of minimal lesion described, incipient or old, and though of course it is much too small for statistical analysis of value, yet it teaches important lessons, especially as to the necessity of prolonged observation of even the fibro-calcific lesion, which may break down after years of unchanged X-Ray appearance.

It is generally agreed that serial X-Rays are necessary to assess the activity of a given lesion, the problem is how long the interval between X-Rays can be. In the exudative and doubtful cases, the interval should at first probably not be more than a fortnight, later a month, and then three months. The importance of a short interval is best shown in case 49, one of the fatal cases. After one month the lesion had already markedly progressed, and had started to break down. An X-Ray after a fortnight might have revealed that the lesion was rapidly progressing, and a pneumothorax could have been induced then, before the lesion started to break down.

Amberson /1942/ would X-Ray these patients at one to three-weekly intervals, as he thinks, that especially the early exudative infiltration can develop cavitation in the course of a week. Edward and Robins /1943/ have seen a moderately advanced lesion develop within eleven days of a negative X-Ray film. Phelps and Edson /1943/ go as far as to advocate follow-up X-Rays at three- to twelve-monthly intervals for the rest of the patient's life. Others, like Brooks /1943/, point out the danger of creating anxiety states by too frequent examinations. This point must not be ignored, and in every case the patient must be considered as an individual, and the need for the procedures undertaken explained, without being alarmist.

It appears to me that the recommendations of the M.R.C. Special Report on Mass Miniature Radiography /1945/ are too conservative when it states on page 65, that "observation cases return to the Chest Clinic for re-assessment at intervals of between one and six months, most frequently three months, depending on the degree of danger attributed to the lesions. In cases where it is almost, but not quite certain that the lesion is already healed, a single re-check after six months may suffice". This last sentence seems to me especially dangerous. Trail /1944/ confirms this by finding that eight cases thought to be inactive, were later found to be active.

Most workers agree that lesions may remain unchanged for years, and then suddenly change /Taschmann 1945/. Often it seems to be the psychological factor that is at work. A leading article in the Lancet /1945/ points out that it is not always the lesion that is indolent, but often the patient.

R e c o m m e n d a t i o n s .

It is clear from the preceeding discussion that no one single factor is sufficient to decide whether a case is active, but that every aspect of the case has to be considered and taken into account. Much of this can be done at the first interview, if sufficient time is devoted to it. This examination should consist of taking a full history, with special reference to symptoms, family history, and contact; a full-size X-Ray picture, a sedimentation rate, the taking of a specimen of sputum or laryngeal swab, and a full physical examination.

As a result of this interview a certain number of cases will definitely be classed as "active", a probably smaller number as "probably inactive". The latter should in my opinion not be altogether dismissed, but should have further X-Rays at infrequent intervals, perhaps at first three- to sixmonthly, then twelve-monthly.

We shall be left with a large group of doubtful cases which will require further investigation. This is probably best done in hospital, to which the patient is admitted for ten to fourteen days. This is among others recommended by Amberson /1942/, Brooks /1944 and Grenville Mathers and Pickering /1945/. In hospital a careful pulse and temperature record is kept, and repeated sputum examinations, laryngeal swabs, or gastric lavages are carried out. The E.S.R. and physical examination are repeated, and further X-Rays, including lateral views, and if thought necessary others in special po-

sitions or stereoscopic pictures are taken.

This full investigation will pick out some more active cases, but leave a residue of quite a substantial number which are still doubtful. These are the cases that provide the greatest problem, and from all the work that has been done, and from my own experience, the fact emerges more and more clearly, that all these patients must be followed-up by radiology at frequent intervals and for long periods. They should at first be X-Rayed monthly, later three-monthly, and after two years six-monthly. They are exemplified in my series mainly by the symptomfree nurses. Meanwhile they can lead what Pierson /1945/ calls a "normal" life, but what is in many cases a considerably modified life. They should be told the facts and dangers. Their work should not be too arduous, and should not exceed eight hours daily. They should have a good diet, and should be in bed for at least nine hours at night, and have one rest-day a week. They should avoid intemperance.

Having seen lesions remain in the same condition during six to eight months sanatorium-treatment, and for perhaps a year or two later, and then suddenly break down, has convinced me of the necessity for this prolonged follow-up. Reisner and Downes /1945/ found lesions even breaking down after being unchanged for five years.

After the preliminary investigation re-X-Ray is the important, and probably the only investigation required, but it is

important that the films are taken by a competent radiographer with the same technique every time, so that they are comparable. Only too often hard and soft films are intermingled.

This method of observation of cases may be expensive in X-Ray films, but is still in the long run the cheapest method for the patient as well as the tax-payer. Without it many cases will progress unnoticed to the moderately advanced or advanced stage, and then require prolonged sanatorium care, as well as being a danger to others. On the other hand its adoption may also lead to the discharge from sanatoria of some patients lying there for months under observation as doubtfully active cases, thus freeing beds for others more in need.

P r o g n o s i s .

It is not out of place here to discuss the question of prognosis of the minimal lesion and the factors affecting it, in so far as it has not already emerged from the previous discussion. In the few collection of cases of sufficient numbers to be statistically significant the figures vary very much, giving a mortality rate of from four to thirty percent in five to ten years. In most cases the mortality rate varied from four to ten percent, Wherrett 1935, Lassen 1930/, but many more cases were still active after five years, in Reisner and Downes series 25% of the originally exudative and productive lesions.

Stein and Israel /1943/ think that sanatorium figures give rather optimistic results, they state that the results are not so good in clinic cases. In comparing American figures one must remember that they usually include Negroes in whom the prognosis is much more unfavourable. In this series there were two deaths /3.1%/, and five cases /7.8%/, were still definitely active, with another 10 /15.6%/, improved but still of doubtful activity. 47 /73.6%/, were either arrested or quiescent. /See table IV/.

There seems to be general agreement that certain factors, like a positive sputum, a raised E.S.R. when first seen, the presence of physical signs etc. do not affect prognosis, in fact many of these cases do better because they are recognised as active early, and therefore more adequately treated.

Reisner and Downes /1945/ found that localisation of the disease had no influence on the prognosis, though this is not the opinion of all workers, especially the Prophit Survey showed that the prognosis is worse in infra-clavicular lesions. Other factors influencing prognosis are age, sex, race, family history, and socio-economic conditions. In females the age group 15 to 25 carries a specially poor prognosis, worse than usual in the type of case dealt with in this series, of Irish stock, coming from the slums of Glasgow and Lanarkshire, often with a positive family history.

The character of the lesion as judged by X-Ray is of course of great prognostic importance, but even the apparently healed cases have not a uniformly good prognosis, as is demonstrated by the Prophit Survey /1948/. In that respect this series confirms the view of most writers that the sub-apical exudative lesion is the most dangerous one. Mental capacity, habits, occupation, psychological attitude to the disease, and opportunity for re-infection must all be taken into account in considering prognosis.

Unfortunately my figures are not sufficiently large to be statistically significant, but both the fatal as well as the progressive cases were young. It seems to me that it is a reflection on the inadequacy of follow-up and treatment that the prognosis even in the minimal case is so poor for some. It speaks strongly against the attitude, perhaps never put into print, but sometimes expressed, that these minimal lesions are best ignored, as in 99 out

of a hundred cases they lead to nothing. Rather they should be a challenge not to allow any minimal case to progress for lack of observation, and to find adequate methods of treatment, so that eventually every one of these lesions is arrested.

T r e a t m e n t .

Having considered the assessment of minimal lesions and their prognosis, we are now faced with the problem of treatment. On this question too there is not full agreement between different authors. Though the value of collapse therapy in Pulmonary Tuberculosis is fairly generally accepted, its use in minimal cases is still a subject for discussion, and the optimum time for its application is also a problem worth considering.

Too often the problem is put as rest versus collapse therapy. This is obviously the wrong approach, rest should always be the basis of treatment. The question should be, rest alone, or rest plus collapse therapy. Collapse therapy is no substitute for rest, and even the advocates of ambulant pneumothorax admit that it is only the shortage of staffed sanatorium beds that justifies this method of treatment.

I think all will agree that every minimal case considered active should ideally be treated in a sanatorium, and have really adequate rest. Treatment even under the best conditions must last for six to twelve months even in the minimal cases. For that reason it is important, as Mayer and Rappaport /1942/ have pointed out, not to overtreat the healed lesions, or the lesion of doubtful activity. They as well as others point out that some of these lesions may remain stationary for years. In these cases observation and repeated X-Ray is the only course.

Brooks /1944/ especially stresses the importance of rest, and is not in favour of collapse therapy, as it might reduce the period of sanatorium treatment. Eglee and Jones /1937/ reason for not advocating collapse therapy are rather the opposite, in that they do not think that it hastens healing, they consider that most of these cases settle down with rest alone. Bobrowitz /1942/ is also of the opinion that A.P. treatment means a longer period in hospital, and for that reason he rarely advocates collapse. He also would keep patients in hospital until lesions are stable for six months.

Many are against collapse therapy because of the dangers of complications, especially in the case of Artificial Pneumothorax. Kruger, Potter and Jaffie /1943/ stress this and therefore only use collapse therapy rarely. They found that 84% of cases improved with bed rest of about six months.

Lawrenson Brown /1936/ thinks that most Tuberculosis Physicians are of the opinion that minimal cases by and large do not need surgical treatment. This is probably correct, in spite of the volume of publications to the contrary. The advocates of collapse therapy seem generally more vocal, and there is a small number of workers, such as Myers /1946/ who advocate collapse therapy in every case. Myers claims excellent results with a hospital or home A.P. in all minimal cases, as part of a Tuberculosis control scheme in Minneapolis. Thomas and Davis /1937/, Zacks /1939/, and Davison /1945/ all advo-

cate Artificial Pneumothorax at once in minimal cases. Moore /1937/ goes so far as to state that all demonstrated lesions should be treated as progressive with pneumothorax.

However the great majority of authors recommend a more selective course, and advise treating each case on its merits, and generally advocate two to three months rest alone first, except in lesions which are obviously breaking down. Hurst and Schwartz /1942/ and Taschmann /1945/ think that early pneumothorax is indicated in all positive sputum cases. The danger is especially great in the sub-apical "Frueh-Infiltrat" and for this many, including Kayne, Pagel and O'Shaughnessy /1939/ advise early collapse, particularly as the tuberculous process may extend with great rapidity. This opinion is generally supported and most physicians recommend that a close watch be kept on these lesions, and collapse therapy used if they do not show definite signs of regression within three months. Continental workers, such as Frisch /1948/ Gaehwyler /1929/ and Lassen /1930/ also agree with this course, as do Americans, like the most painstaking and careful Hendricks /1945/ and Hegner /1939/. During adolescence, and when the prognosis is worse for other reasons, collapse therapy is more urgent than in older patients. /Busch 1940/.

There is no doubt that with early collapse the complications are far less frequent and less serious than when it is left until later. In spite of this Wishberg /1932/ considers that though the immediate results of collapse are good, the ultimate results are poor.

To avoid this, collapse therapy must be kept up for long enough. Derendorf /1930/ and Fraenkel /1931/ recommend 18 months, but Chadwick and Ewatts /1940/ recommend three years and up to five years if a cavity was present.

Most authors who have compared the results of cases treated without collapse with others so treated claim that the results are better with collapse therapy, but there have been very few comparable series. Shaw /1933/ compared a large series at the Brompton Hospital with those of the Midhurst Sanatorium /Trail and Stockman 1919/ before the introduction of collapse therapy, and found the results favoured collapse, but the cases were not strictly comparable, as in the earlier series not all were X-Rayed.

Heller's /1947/ figures are strongly in favour of collapse, but his series was small, and as all were treated at home, rest was often inadequate. He draws the conclusion from his results that it is not safe to treat conservatively a minimal lesion, which has shown evidence of activity, even though it is sputum-negative. In spite of the criticisms that can be offered of his paper he makes out a convincing case.

The Method of Collapse.

The method of collapse generally advocated is Pneumothorax, other measures are usually only applied if Pneumothorax fails. The reason for this is that most of the lesions are apical or sub-apical, and very often a selective collapse can be achieved in these cases. A phrenic crush or pneumo-peritoneum is also not so effective for upper-zone lesions. Not all workers would agree that Pneumothorax is the collapse measure of choice, thus Leslie and Anderson /1937/ say that Phrenic crush was all that was required for 86.6% of all surgically treated minimal cases, and they treated 90% of minimal lesions surgically after 1934. These workers are enthusiasts for phrenic crush which they often repeat and even do bi-laterally. O'Brien /1935/ also advocates phrenic crush or avulsion. It seems to me very doubtful that a phrenic crush will give sufficient relaxation to the upper part of the lung to allow these lesions to contract. Reinforcement by a pneumo-peritoneum is recommended by some, and this may be of use where an A.P. has failed, and is perhaps sometimes preferable in view of the lower incidence of complications with this procedure.

Amberson /1942/ would use this method as he thinks that A.P. is only suitable for the case in which the active inflammation has subsided, leaving a cavity which does not heal for mechanical

reasons. He even advocates a limited thoracoplasty for some of the apical cases, especially in the young.

Turner and Collins /1936/ are able to bring forward very strong arguments in favour of pneumothorax, based on Sweeney's pathological investigation. He showed that a great number of patients dying of Tuberculosis have had a long series of endogenous re-infections with one partially healed lesion seeding the new ones. Pneumothorax seemed to them the most rational way of preventing this. Their cases treated with Pneumothorax did well, while those treated with rest and Phrenic crush did badly.

I have also considered Pneumothorax the method of choice in collapse therapy, and have in apical or sub-apical lesions always attempted it first, when I considered collapse therapy indicated. Only if Pneumothorax failed, and in two cases to supplement an A.P., have I used Phrenic crush. All lower and mid-zone lesions in this series were productive or fibrotic, and did not require active measures, therefore the problem of Phrenic crush did not arise, but I think that in exudative lower zone lesions Phrenic crush and Pneumo-peritoneum should be considered. Pneumo-peritoneum, Thoracoplasty and other methods of collapse were not used except in one patient whose lesion progressed in spite of A.P. and Phrenic. In one or two cases the application of sandbags to the apex affected was used, but in too few cases to give an opinion about its value.

Treatment Applied.

In my series of cases 47 were treated with rest alone, though in some of these collapse was attempted, but did not succeed. These cases must be included in the "Rest Only" category, as when A.P. had failed other collapse measures were usually not carried out, so that in effect they had only rest. 13 cases had some form of collapse, 11 of them a Pneumothorax and two a Phrenic crush, in the latter two cases A.P. had failed. One of the cases of Pneumothorax /case No.35/ was admitted with a spontaneous Pneumothorax which was kept up, as it appeared to be controlling the lesion satisfactorily. In case No.13 an effusion was replaced by air because of the presence of an exudative lesion.

Most patients first had two to three months bed-rest before collapse treatment was started, but in a few cases, where the lesion appeared to be in danger of breaking down, Pneumothorax was induced right away/case No.50, 60, and 62/. This should perhaps be done rather more often, especially in view of the fatal case No.49 which progressed so much in three weeks that an A.P. was than not able to prevent breaking down. It is possible that the lesion might have been controlled had an A.P. been induced at once.

Pneumothorax was mainly used in the sub-apical lesions of the nature of acute exudative infiltrates. The apical cases treated with Pneumothorax also had lesions of this type. The multiple small

apical foci were generally not considered for A.P. as most of them did very well. This is in keeping with Hedvall's /1946/experience. It must be realised that these lesions are however sometimes not devoid of danger, as stressed by Mascher /1943/, and Bergquist and Ehnberg /1943/.

The complication rate in these cases of Pneumothorax was not low, though most of the complications were harmless. Only three cases had no adhesions, five had adhesions which either were easily cut, or did not interfere with contraction of the lesion. Three cases had adhesions and later also developed effusions, and their collapse had to be given up. In two of these however the collapse achieved was sufficient to benefit the lesion.

There were four other patients in whom A.P. was tried in several rib spaces, but collapse was not achieved; one of these /case No.48/ was advanced by the time the A.P. was attempted. Nevertheless the incidence of adhesions in this series is very high considering the cases were minimal and early.

In spite of this, I consider as a result of my experience that exudative infiltrates should be treated by Pneumothorax almost at once, or if they are not immediately so treated, should be kept under observation with weekly or fortnightly X-Rays at first, while on strict bed-rest. Definitely productive or fibro-productive lesions should be treated with rest for two to three months first, before collapse therapy is considered. Even fibro-calcific lesions, if shown to be breaking down under observation, must be considered for collapse therapy.

Chrysotherapy in the form of intra-venous Crysalbin was used in a small percentage of cases, especially bi-lateral ones. Though gold has fallen into disuse during the last decade, it is still being used by some physicians, and it has also been used for some years at the sanatorium where these patients were seen, mainly on more advanced cases. It appeared to me that if it were of value in more advanced cases, and I had no doubt that some patients derived benefit, that there was no valid reason, why it should not also produce a response in minimal lesions. It was therefore used especially in bi-lateral cases which were not responding to rest alone.

Its value, apart from the psychological one, is of course impossible to assess in this type of case and in so few cases. The psychological benefit obtained does not of course justify the use of a toxic substance like gold, when sterile water might have achieved the same, but I may point out that in none of the minimal cases treated with it were there any toxic effects, nor did any of the cases so treated deteriorate.

Streptomycin, para-amino-salicylic acid, bromazolo, or any of the other chemo-therapeutic drugs or anti-biotics were not available at the time of this work. The use of streptomycin is probably contra-indicated in minimal cases because of the danger of inducing drug-resistance. It seems better to reserve its use in case of haematogenous spread or more advanced disease.

Only in those cases where none of the usual methods appear to stop the progress of the lesion does its use seem justified in minimal cases. Used thus it may eventually help to lower the death rate of minimal lesions.

The same holds for most of the other drugs because of their toxic effects, with the exception of para-amino-salicylic acid and promizole, which are perhaps worth a trial, as they do not seem to produce drug resistance. But their main place will probably be one of aid in treatment, for instance in preparing a case for collapse therapy.

Duration of Treatment.

Finally it is interesting to consider the duration of treatment in hospital in these minimal cases. In calculating the length of stay we must exclude certain cases, first of all the two inactive cases, and four patients who left against medical advice within the first three weeks. Only one other patient left against advice at a later stage, that is after four months. A further case excluded from my calculations is one which left hospital by agreement to go to the South of England for family reasons, and carried on treatment satisfactorily at home. Furthermore I have excluded the patients with lesions of doubtful or very low activity who were kept only for from one to three months, and were discharged to be kept under observation. These include all the nurses in the series.

This leaves me with 49 patients who had lesions which were definitely active, and who stayed in the sanatorium wards until considered fit for discharge. We must take into account the fact that patients were discharged at the earliest possible moment because of the great pressure on beds, and that under ideal conditions the time spent in hospital might have been two to three months longer.

Of the 49 patients twelve stayed for from three to six months, nineteen for from six to nine months, ten for from nine to twelve months, and eight for from twelve to eighteen months. /see Table V/.

The average length of stay was approximately eight and a half months / 258.6 days/, not counting the two fatal cases the time was about eight months / 244.7 days/.

In this small series it is not of much value to compare the length of stay of the cases treated by rest alone and those treated with collapse measures as well. While rest cases stayed on the average for seven and a half months, collapse cases stayed approximately eleven months. While this seems to confirm Eglee and Jones /1937/ and Bobrowitz /1942/ statement that A.P. cases require longer in hospital, one must take into account that in this series the more active cases and those showing signs of breaking down on rest alone were treated with collapse measures. There is good reason to believe that these patients would have required considerably longer if treated with rest alone. A true comparison can only be made by treating every active minimal case with collapse measures and then comparing the result with similar cases not so treated.

Table V. also gives figures to indicate the length of follow-up of the cases and it will be seen that almost two-thirds of them were followed-up for more than two years.

Conclusions on Treatment.

As in the assessment so in the treatment of minimal lesion it is essential to consider every patient separately. Each patient presents a distinct problem which must be studied from all aspects. For the productive, fibro-productive, and fibro-calcific lesions collapse therapy is not required, unless they show signs of breaking down under treatment or under observation, but for the exudative lesion collapse treatment should be considered early, and this applies especially to the sub-apical exudative infiltrate. In most cases an initial period of rest alone for two to three months is justified, provided serial X-Rays are taken at short intervals, so as not to miss some extension of the lesion.

Any lesion not responding to rest should in my opinion have collapse therapy applied, and usually preferably Artificial Pneumothorax. For the basal lesion Phrenic Crush and Pneumo-peritoneum is probably desirable, and when A.P. fails this can also be applied to apical and sub-apical lesions. Those lesions which appear to be very active, and in danger of breaking down, should in my opinion have collapse therapy at once.

In general sanatorium treatment must be of the best, and not only aim at proper rest, but also at educating the patient, so that she continues her treatment after discharge.

Subsequent break-down is often due to the fact that we have to send our patients back to the same environment from which they came, and that they forget the lessons of the sanatorium. Aftercare is an important part of the treatment also for the minimal case.

S U M M A R Y A N D C O N C L U S I O N S.

I have tried to discuss the assessment, prognosis, and treatment of minimal tuberculous lesions, based on 64 cases. Though these cases are to a certain extent selected, they illustrate well the different types of lesion seen, and the course taken by these lesions.

To assess the degree of activity of a minimal lesion correctly, it is necessary to treat each patient as an individual presenting a separate problem. A careful history must be taken, with special emphasis on age, sex, race, family history, contact, and symptoms. 51 out of 55 definitely active cases in this series had symptoms, the most frequent symptoms being cough, lassitude, loss of weight, and pain. Next the patient should be carefully examined. This examination should include a sedimentation rate, and an examination of sputum if this is available, or an examination of a laryngeal swab instead. It should be followed by a full-size radiograph of good quality.

This full examination will allow one to decide that certain cases are definitely active, and that others are probably inactive, the X-Ray being the most valuable guide in this decision. A great number of patients will be left in whom the degree of activity is still in doubt. These should be admitted to hospital for ten to fourteen days for serial X-Rays, and X-Rays in special



positions, for further sputum examinations, and to get an accurate pulse and temperature chart. This will help to come to a decision about many more cases, but will still leave a large group labelled "doubtfully active". These cases, as well as the probably inactive ones, must be kept under observation by serial X-Rays, and it is important that these X-Rays should be taken at intervals which are not too long.

In the case of the probably inactive lesions this interval can at first be three to six months, later twelve months, but in the doubtfully active cases it should not be more than one month at first, later three months, and after two to three years may be six months. In the case of the active lesions serial X-Rays are just as important, so as not to miss the first sign of progression or breaking down, and to be able to select the optimum time for collapse therapy.

I have tried to show that the assessment and prognosis are influenced by the pathological nature of the lesion as revealed by radiography, and that the most common types of minimal lesion are the multiple small "initial foci", usually apical, and the exudative infiltrate /"Frueh-Infiltrat"/, which is usually sub-apical in position. Apart from these types of lesion, productive, fibro-productive, and fibro-calcific lesions are seen, as well as mixed lesions. The prognosis of the sub-apical exudative infiltrate is comparatively the most serious, but any type of lesion may break down even after having

shown no change for many months or even years.

Every definitely active case requires sanatorium treatment on the average for from six to twelve months. In this series the average was eight and a half months. In the case of the multiple apical foci, and the productive, or fibrosing lesions rest alone is sufficient, but for the exudative lesion collapse therapy should be considered. Usually it is justified even in these cases to try the effect of two to three months strict bed rest first, but during this time X-Rays must be frequent, preferably fortnightly. If the lesion seems to be spreading, or to be in danger of breaking down, collapse therapy should be considered at once, in some cases without trying the effect of rest alone. The collapse treatment of choice in the upper zone lesion is Pneumothorax, for the basal lesion, and if A.P. fails, Phrenic Crush and Pneumo-peritoneum is advised.

Results in this series were not completely satisfactory in that two patients died, and in five others the lesions were either progressive or unchanged at the end of the period of observation. I consider that the outcome of many cases, and particularly the fatal ones, might have been more favourable if they had been more carefully followed up in the early stages. Collapse therapy might then have been used earlier in some of them. Thus all minimal lesions must be carefully followed up, and collapse therapy used early in progressive cases, and when rest alone fails.

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APPENDIX I.

TABLES.

T A B L E I.

Incidence of Symptoms in 64 cases.

Symptom	No. of cases	% of all cases	% of cases having symptoms
Cough	26	40.6	50.0
Lassitude	24	37.5	46.1
Loss of weight	15	23.4	28.8
Haemoptysis or "staining"	11	17.2	21.2
Pain	15	23.4	28.8
Other symptoms (Malaise, Dyspepsia etc.)	10	15.6	19.2
No symptoms	12	18.8	

T A B L E II.

Incidence of Abnormal Findings.

	Active	Of doubtful or low act.	Inactive
Total number of cases	55	7	2
With symptoms	51	1	-
With physical signs	29	-	-
With Pyrexia	32	-	-
With raised E.S.R.	36	-	-
T.B. positive	17	-	-
Without any such abnormality	-	6	2

T A B L E III.

Site of Lesion.

	Rt.side	Left side	Bilateral
Apex	9	5	2
Sub-apical	18	17	
Midzone	4	6	
Lower zone	-	1	
Rt.apex and left sub-apical area			1

T A B L E I V .

Classification and Progress of Lesion.

	Total	Arrested or quiescent	Improved	Progres- sive or unchanged	Died
Multiple apical foci	16	13	2	1	-
"Frueh-Infil- trat" (Exuda- tive lesions)	23	13	6	3	1
Productive Lesions	10	8	2	-	-
Fibro- productive Lesions	12	11	-	-	1
Mixed Lesions	3	2	-	1	-
Total	64	47	10	5	2

T A B L E V.

Length of Stay and Length of Follow-up.

	Length of stay in Hospital	Length of stay of ac- tive cases staying as long as necessary	Length of Follow-up	
			No.	%
0 - 3 months	14	-		
3 - 6 months	13	12	10	15.6
6 - 9 months	19	19		
9 - 12 months	10	10		
12 - 24 months	8	8	13	20.3
24 - 36 months	-	-	21	32.8
36 - 48 months	-	-	12	18.7
48 - 60 months	-	-	8	12.5

APPENDIX II.

CASE NOTES.

Case Nr. 1. C.D.

Age: 21.

Salesgirl, Single.

Admitted: 9.7.45.

Discharged: 27.3.46.

Family History: Negative. No known contacts.

Housing: Lanarkshire mining area, 4 aptmts. 4 over 12, own bed.

History: Lassitude and loss of weight, 6 mths. Diphtheria May 1945, pain in the chest while in hospital.

On admission: General condition fair, wt. 7 st. 13 lbs.

E.S.R. 28/56. Sputum positive. Occasional rise of temperature to 99°.

X-ray: Multiple small foci from apex downwards.

Physical signs: Some crepitations at right apex.

On discharge: General condition good. Wt. 9 st. 5 1/2 lbs.

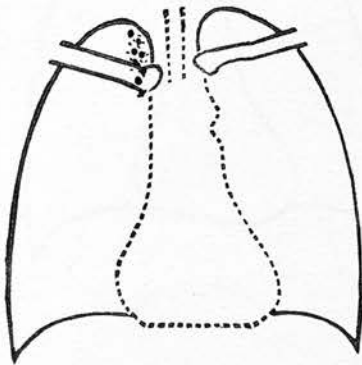
E.S.R. 9/19. Sputum none.

X-ray: No significant change.

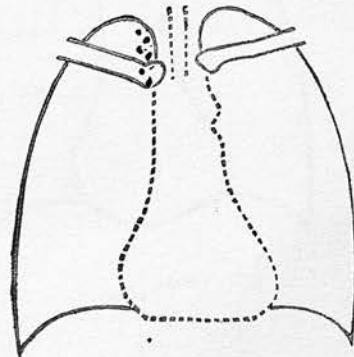
Physical signs: none.

Treatment: Rest only.

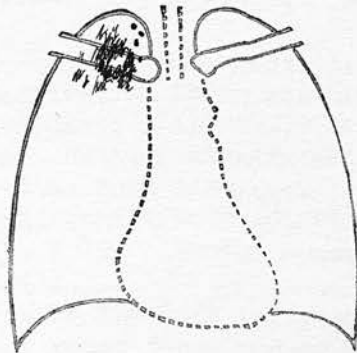
Progress: Well until Feb. 1947, then haemoptysis following overwork and worry. Loss of weight. Sputum positive again. X-ray shows spread of infection and breaking down. Cavitation first definite July 1947.



9.7.45.



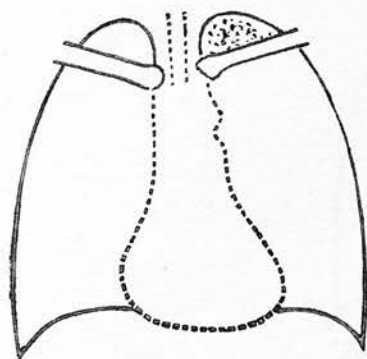
20.3.46.



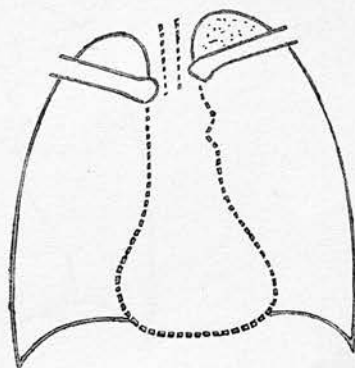
5.8.47.

Case Nr. 2. M.C. Age: 18 Factory worker, Single.

Admitted: 22.2.44. Discharged: 25.2.44., against medical advice.
 Family History: Father died Pul. Tuberc. 1 yr. ago, sister P.T.B.
 Housing: Glasgow tenement, 3 aptmts., 5 over 12, 1 under 12
 History: Haemoptysis Feb. 1943 and Jan. 1944. No cough, loss of weight, some enlarged cervical glands. 10 lbs.
 On admission: General condition poor, wt. 6 st. E.S.R. 5/10. Afebrile. Sputum negative to all tests including gastric lavage.
 X-ray: Minute foci at left apex only.
 Physical signs: none.
 On discharge: No change.
 Treatment: Modified rest at home for some months.
 Progress: Attended dispensary at rare intervals, no change. Considered quiescent.



22.2.44.

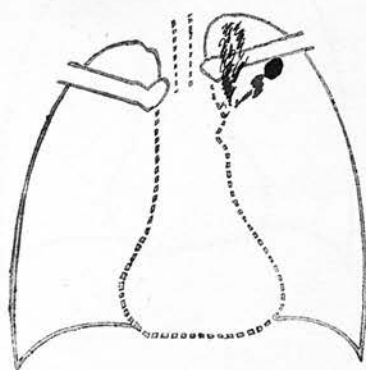


10.3.46.

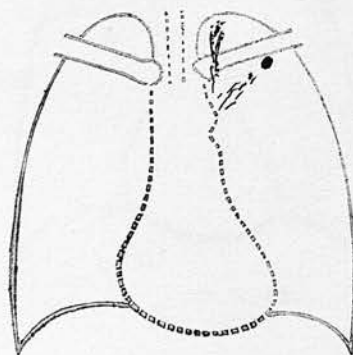
Case Nr. 3. Mrs. A.W. Age: 20. Munition worker, married.

Admitted: 12.11.42. Discharged: 11.6.43.
 Family History: Negative, no known contacts.
 Housing: Glasgow tenement, 2 aptmts., 3 over 12, own bed.
 History: No symptoms. Nothing significant except phlyctenular conjunctivitis some time ago.
 On admission: General condition good. Wt. 7 st. 11 1/2 lbs. E.S.R. 6/12. Sputum none, negative to all tests. Afebrile.
 X-ray: Infiltration in the left infraclavicular region, consisting of a round focus and an exudative lesion towards the apex.
 Physical signs: A few crepitations at the left apex.
 On discharge: General condition good, wt. 9 st. 5 lbs.

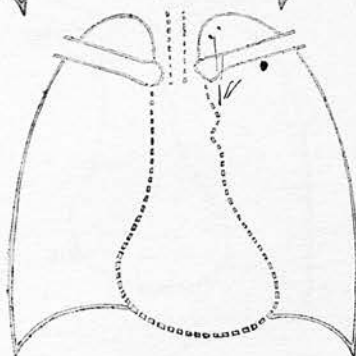
E/S/R/ always normal, sputum none.
 X-ray shows fibrosis of lesion.
 Physical signs: none.
 Treatment: Rest only.
 Progress: Nov. 1947: Feels well, wt. 9 st. 8 lbs. No symptoms.
 Has had a normal pregnancy.
 X-ray A small calcified lesion in upper third of left lung. Lesion regarded as arrested.



12.11.42.



26.5.43.



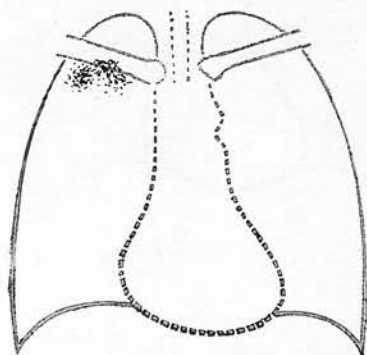
16.4.47.

Case Nr. 4. Mrs. A. McL. Age: 21. Munition worker, married

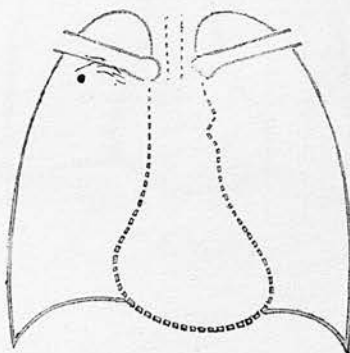
Admission: 2.7.43. Discharged: 11.3.44.
 Family History: negative. Husband Pul. Tuberc.
 Housing: Glasgow tenement, 2 aptmts., 3 over and 3 under 12. Shares bed.
 History: Dry cough 2 yrs., loss of weight 1 yr. Lassitude.
 On admission: General condition fair, wt. 8 st.
 E.S.R. 8/21. Sputum positive before admission.
 Occasional rise of temperature to 99° at first.
 X-ray: A small area of infiltration below the right clavicle.
 Physical signs: A few crepitations at the right apex.
 On discharge: General condition good, wt. 9 st. 1 lbs.
 E.S.R. always normal. Sputum none.
 X-ray: Lesion gradually fibrosed, leaving only a small nodule.
 Physical signs: none.

Treatment: Rest only.

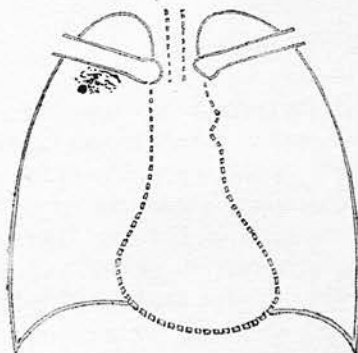
Progress: In May 1946 slight spread below right clavicle. Wt. reduced to 8 st. 2 1/2 lbs. Lassitude. Lost sight off. Considered active at last visit.



7.7.43.



10.2.44.



10.5.46.

Case Nr. 5. Mrs. M.S.

Age: 21. Writer, married.

Admitted: 20.6.43.

Discharged: 27.10.43., against advice.

Family History: Negative. No known contacts.

Housing: Fair living conditions, own bed.

History: Cough, tiredness, night sweats, loss of weight 3 mths.

On admission: General condition fair, wt. 8 st. 13 lbs.

E/S/R/ 25/52. Sputum none, negative to all tests.

Occasional rise of temperature to 99° at first.

X-ray: Small well defined lesion in right infra clavicular area.

Physical signs: None.

On discharge: General condition good, wt. 9 st. 9 lbs.

E.S.R. 8/20. Sputum none.

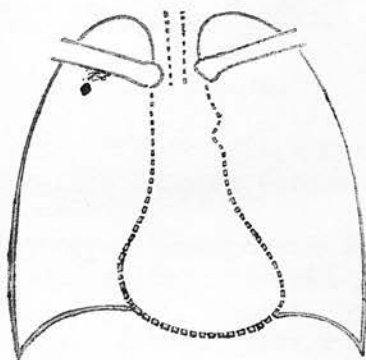
X-ray: no significant change.

Physical signs: none.

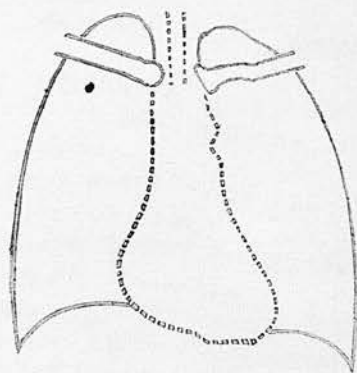
Treatment: Rest only.

Progress: Dec. 1947: Very well. X-ray shows now no lesion.

Considered arrested.



4.7.43.



2.9.43.

Case Nr. 6. Mrs. M.K.

Age: 31. Soap packer, married.

Admitted: 5.3.43.

Discharged: 24.3.43. against medical advice.

Family History: negative. No known contacts.

Housing: Fair housing conditions, own bed.

History: Pleurisy with effusion 1931. "Influenza Jan. 1943 with cough and sputum. Some loss of weight..

On admission: General condition fair, wt. 8 st.

E/S.R. 9/30. Sputum positive. Afebrile.

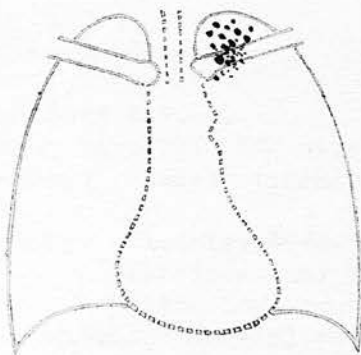
X-ray: Multiple calcified lesions at left apex and behind clavicle. There appears to be some re-activation.

Physical signs: Some wasting, diminution of percussion note and breathsounds over left upper zone. A few creps.

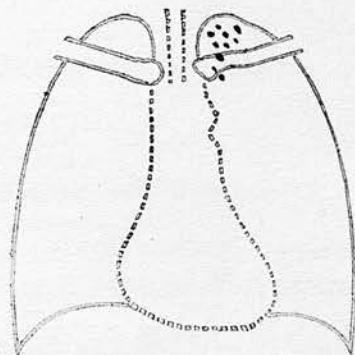
On discharge: No change.

Treatment: Modified rest at home.

Progress: Dec. 1947: General condition very good. Lesion appears arrested.



8.3.43.



1.12.47.

Case Nr. 7. H. McK.

Age: 20. Shop assistant, single.

Admitted: 17.12.46.

Discharged: 21.12.46. against medical advice.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 apts., 7 over and 1 under 12, shares bed.

History: Haemoptysis Oct. 1946, no symptoms before or since.

On admission: General condition fair, wt. 8 st. 1 lb.

E.S.R. 5/12. Sputum none, negative to all tests.

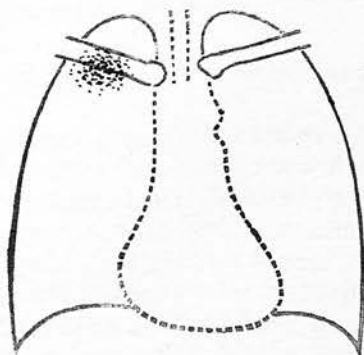
X-ray: A small area of infiltration in the right infraclavicular region which is fluffy and active.

Physical signs: Some flattening of right apex with diminished percussion note.

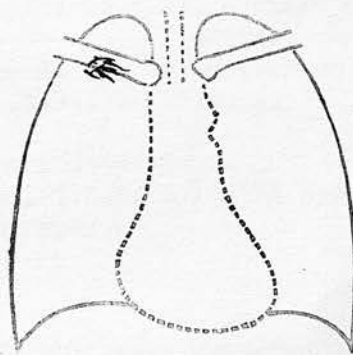
On discharge: No change.

Treatment: Modified rest at home.

Progress: July 1947: Well, wt. 8 st. 13 lbs. There has been improvement in physical condition and X-ray appearance. Last X-ray showed further improvement.



17.12.46.



4.7.47.

Case Nr. 8. D.S.

Age: 18. Hairdresser, single.

Admitted: 6.9.45.

Discharged: 26.6.46.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 4 apts., 3 over and 2 under 12. Room to herself.

History: Pleurisy 1943, occasional pain in right shoulder since. Tiredness and lassitude, cough and loss of weight March 1945. Some sputum in April.

On admission: General condition poor, wt. 9 st. 2 lbs.

E.S.R. 22/44. Sputum scanty, negative to all tests Afebrile.

X-ray: Multiple small foci at right apex.

Physical signs: A few crepitations at right apex.

On discharge: General condition fair, wt. 10 st.

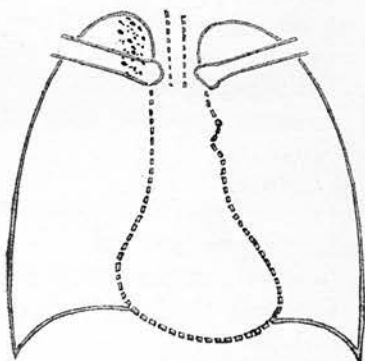
E.S.R. 5/20. Sputum none, no physical signs.

X-ray: Lesion gradually clearing.

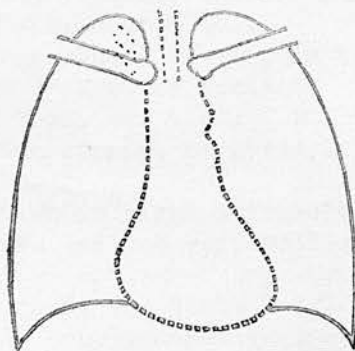
Treatment: Rest only.

Progress: August 1947: Well, no symptoms. Wt. 9 st. 12 lbs.

X-ray May 1947: No disease is now seen.



8.9.45.



14.5.46.

Case Nr. 9. A.G.

Age 21.

V.A.D., single.

Admitted: 27/5/44.

Discharged: 15.6.44. against medical advice.

Family History: Negative.

Nursing duties on sanatorium wards, from 1.3.44. to 27.5.44.

Housing: Satisfactory.

History: No symptoms. X-ray in January 1944 clear.

On admission: General condition good. E.S.R. 5/10. No sputum.

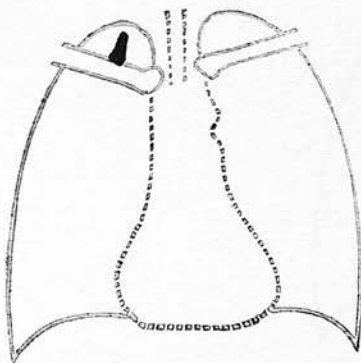
X-ray: Well defined shadow at right apex.

Physical signs: None.

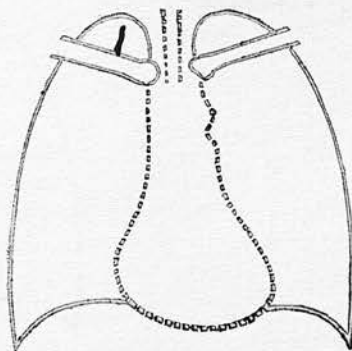
On discharge: No change.

Treatment: Modified rest at home.

Progress: May 1945: Well, back at work. X-ray reported practically clear. Well since then, regarded arrested.



25.5.44.



15.5.45.

Case Nr. 10. C.C.

Age : 22. Shop assistant, single.

Admitted: 9.10.46. Discharged: 31.7.47.

Family History: Sister died of Pul. Tuberc., brother Pul. Tuberc.

Housing: Lanarkshire industrial town, shares bed.

History: Cough and sputum for four mths., later pain in the back and lassitude, was then X-rayed as contact.

On admission: General condition good, wt. 9 st.

E.S.R. 9/25. Sputum scanty, negative to all tests. Afebrile.

X-ray: Probably early infiltration in right infra-clavicular region medially, exudative and not very well defined.

Physical signs: None.

On discharge: General condition good, wt. 8 st. 9 1/2 lbs.

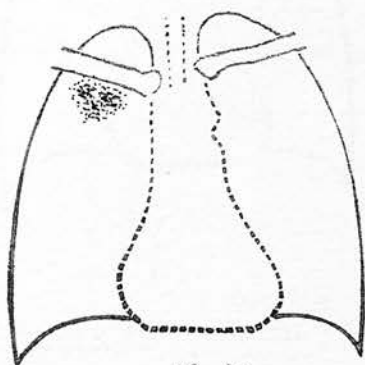
E.S.R. 9/16. Still scanty negative sputum.

This was considered to be due to chronic nasal catarrh.

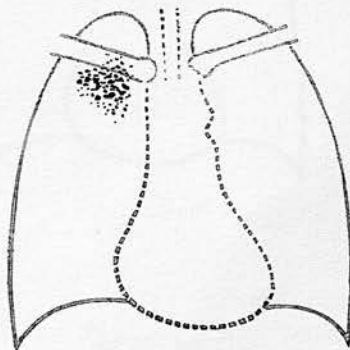
X-ray: Right A.P. which was induced after 3 mths. rest when lesion showed some spread. Temporary pleural effusion.

Treatment: Artificial Pneumothorax after trial with rest alone.

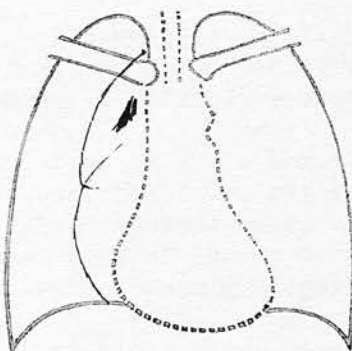
Progress: Dec. 1947: Good general condition, A.P. kept up. No effusion, considered improved.



15.10.46.



21.1.47.



29.7.47.

Case Nr. 11. E.C.

Age : 21 Machine operator, single

Admitted: 21.7.45. Discharged: 12.4.46.
 Family History: Negative, no known contacts.
 Housing: Lanarkshire industrial town, own bed.
 History: Pain in chest Sept. 1944, "bronchitis" and lassitude May 45.
 On admission: General condition poor, wt. 7 st. 7 lbs.
 E.S.R. 8/22. Sputum: Scanty, negative to all tests.
 Afebrile.

X-ray: A few small well defined patches of infiltration in the right mid-zone peripherally.

Physical signs: None.

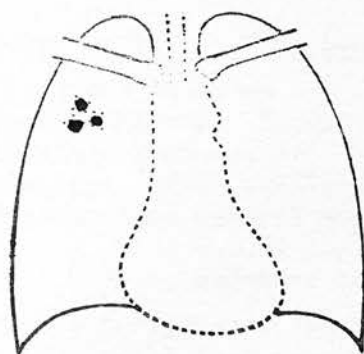
On discharge: General condition good. Wt. 8 st. 1 lb.

E.S.R. 3/14. No sputum.

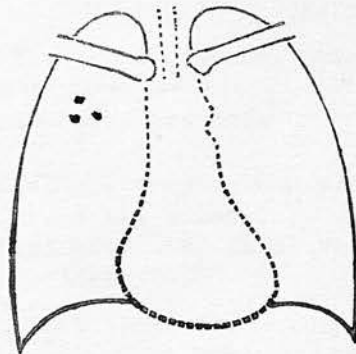
X-ray : Lesions show hardening.

Treatment: Reser and Chrysotherapy.

Progress: Oct. 1947: Slight loss of wt. No symptoms. X-ray shows only three hard nodules. Considered quiescent.



24.7.45.



10.11.47.

Case Nr. 12. J.L.

Age: 21. Typist, single.

Admitted: 3.9.46. Discharged: 31.1.47.
 Family History: Negative, no known contacts.
 Housing: Glasgow tenement, 5 aptmts., 6 over and 6 under 12.
 Patient shares bed.

History: Pleurisy with effusion 1940. Lassitude 1945. Loss of wt.

On admission: General condition fair, wt. 8 st. 4 lbs.

E.S.R. 7/17. Sputum: None, all tests negative.

Occasional rise of temperature to 99°.

X-ray: Multiple small foci from right apex downwards.

Physical signs: None.

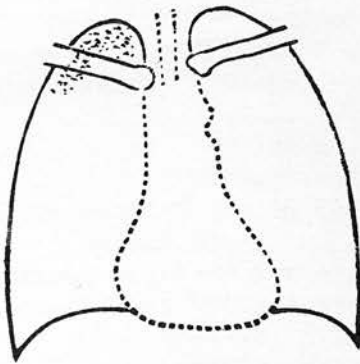
On discharge: General condition good, wt. 8 st. 10 lbs.

E.S.R. 7/17. Sputum none

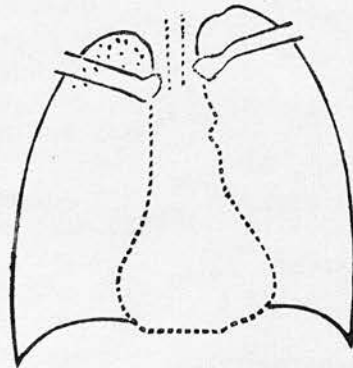
X-ray: No change.

Treatment: Rest only.

Progress: Oct. 1947: Well, wt. 9 st. 4 lbs. X-ray shows improvement.



6.9.46.



20.10.47.

Case Nr. 13. Mrs. L.K.

Age: 23. Housewife, married.

Admitted: 21.5.44.

Discharged: 19.2.45.

Family History: Negative, no known contacts, evacuee.

Housing: Evacuee.

History: After confinement developed slight cough, then pleurisy.

On admission: General condition good, wt. 8 st. 6 lbs.

E.S.R. 16/36. Sputum: None after the first week, negative to all tests. Afebrile.

X-ray: Early exudative lesion behind right clavicle. Multiple small foci both apices. Effusion at right base.

Physical signs: Those of fluid at the right base.

On discharge: General condition good, wt. 9 st.

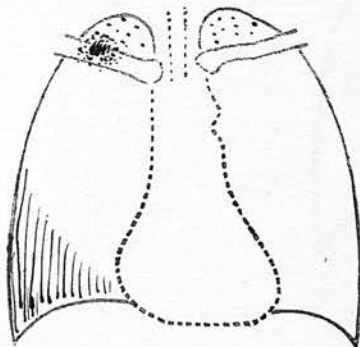
E.S.R. 6/12. Sputum none.

Right Pneumothorax was induced after aspiration of effusion, fair collapse.

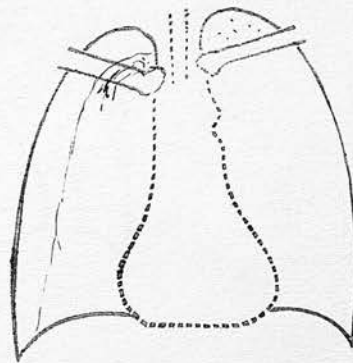
X-ray: A.P., lesion almost cleared.

Treatment: Rest and Artificial Pneumothorax.

Progress: A.P. well maintained, lesion gradually cleared. Quiescent.



18.6.44.



13.2.45.

Case Nr. 14. W.D.

Age: 15.

Not working, single.

Admitted: 24.10.44.

Discharged: 28.7.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 apts., 4 over 12, own bed.

History: Haemoptysis 5 mths ago, cough for two months.

On admission: General condition good, wt. 9 st.

E.S.R. 4/10., later on one occasion 12/24.

Sputum positive.

Occasional rise of temperature above 99°.

X-ray: Round focus in left upper zone near hilum, appears to be spreading.

Physical signs: A few crepitations in the left upper zone.

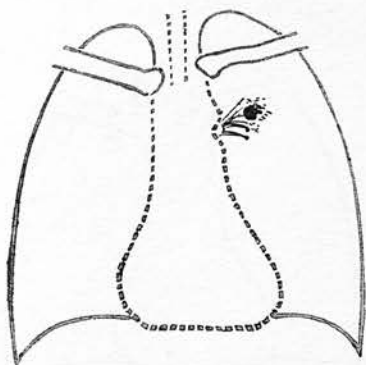
On discharge: General condition good, wt. 10 st. 4 lbs.

E.S.R. 8/20. Sputum none.

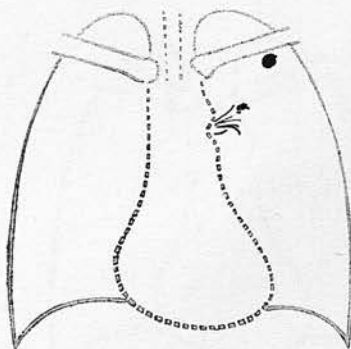
X-ray: While the original lesion had cleared, a small focus had in appeared in March 1945 in the left infraclavicular area, by June this was round and well defined. No physical signs.

Treatment: Rest and Chrysotherapy.

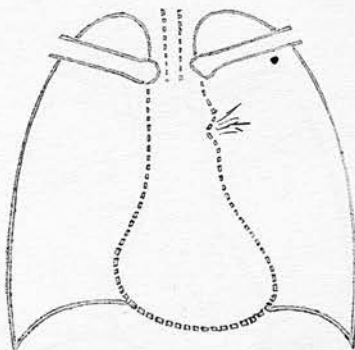
Progress: Nov. 1947: Well, wt. 9 st. Small calcified lesion in left infraclavicular area, otherwise lungfields clear.



25.10.44.



15.6.45.



16.4.47.

Case Nr. 15. A.T.

Age : 21.

Single.

Admitted: 22.2.44.

Discharged: 31.8.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 3 apts., 5 over and 1 under 12, shares bed

History: Tiredness and lassitude for 18 mths, cough and slight staining during the winter. 12 mths on waiting list:

On admission: General condition: Poor. Wt. 7 st. 10 lbs.

E.S.R. 11/17. Sputum at first negative, positive later Afebrile.

X-ray: Multiple small foci spreading down from right apex, fibrosing

Physical signs: A few crepitations at right apex.

On discharge: General condition fair, wt. 8 st 10 lbs.

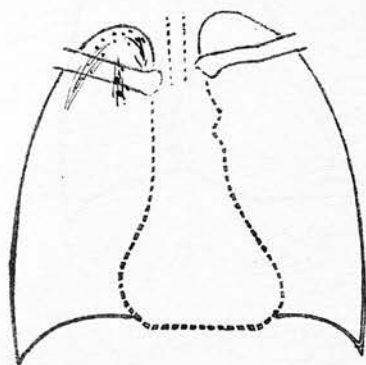
E/S/R/ 4/10. Sputum none.

X-ray: Right A.P. which was induced first, was contra-selective and had to be abandoned after an effusion developed as well. Right phrenic crush. X-ray now shows thickened pleura and an area of fibrosis at the right apex.

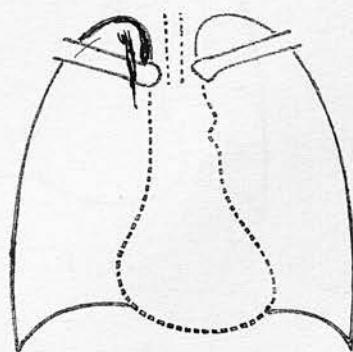
Physical signs: none.

Treatment: Rest, A.P. ineffective. Phrenic crush.

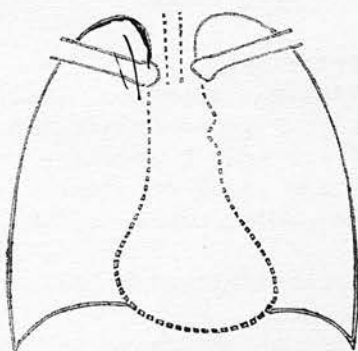
Progress: Feb. 1946: Well, wt. 9 st. 6 lbs. X-ray shows thickened pleura only.



24.2.44.



22.5.45.



24.2.46.

Case Nr. 16. J. McM.

Age: 18. Tailoress, single.

Admitted: 12.6.45.

Discharged: 30.11.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 1 aptmt, 6 over and 2 under 12, shares bed.

History: Pain at left apex for some time, cough and sputum.

On admission: General condition good, wt. 7 st. 1 lb.

E.S.R. 4/12. Sputum scanty, none after first fortnight, negative to all tests.

Occasional rise of temperature to 99°.

X-ray: Well defined lesion 1" across in left clavicular area.

Physical signs: Slight diminution of percussion note and fine crepitations at left apex.

On discharge: General condition good, wt. 8 st.

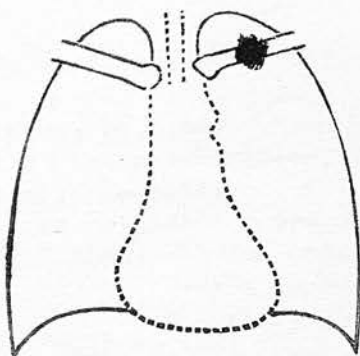
E.S.R. 3/6/ No sputum.

X-ray little change, no physical signs.

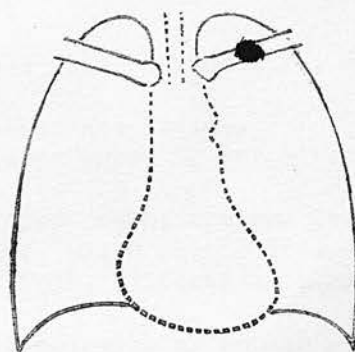
Treatment: Rest and Chrysotherapy.

Progress: No change, married, one normal pregnancy, in Sept. 1947

X-ray still showed no change in lesion.



12.6.45.



10.9.47.

Case Nr. 17. E. McN.

Age: 17. Packer, single.

Admitted: 30.11.43.

Discharged: 14.10.44.

Family History: Negative, no known contacts.

Housing: Lanarkshire industrial town, 2 aptmts, 6 over 12, own bed.

History: Breathless on exertion 3 mths due to pleural effusion.

On admission: General condition good, wt. 8 st. 13 lbs.

E.S.R. 6/11. Sputum none, all tests negative.

Afebrile.

X-ray: Small fibrosing lesion in right midzone, pleural thickening at left base.

Physical signs: Diminished breathsounds and percussion note left base.

On discharge: General condition good, wt. 10 st. 7 1/2 lbs.

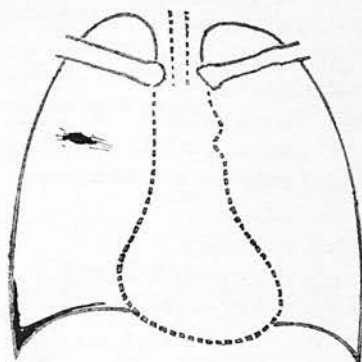
E.S.R. 4/8. No sputum.

K-ray shows resolution of lesion. No physical signs.

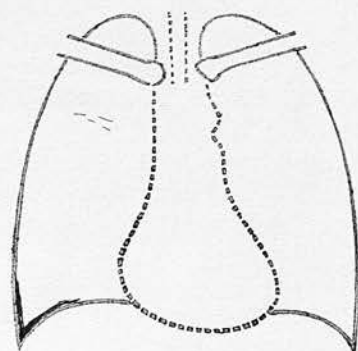
Treatment: Rest only.

Progress: March 1946: Well, wt. 9 st. 13 1/2 lbs. X-ray clear.

Accepted for emigration to Canada.



2.12.43.



24.8.44.

Case Nr. 18. Mrs. G.J.

Age: 33. Housewife, married.

Admitted: 29.5.44.

Discharged: 1.7.44.

Family History: Negative, worked in sanatorium 10 yrs ago.

Housing: Evacuee.

History: Following a pregnancy developed cough, sputum, lassitude.

On admission: General condition: fair, wt. 8 st. 13 lbs.

E.S.R. 10/30. Sputum: None, all tests negative.

Afebrile.

X-ray: Well defined focus in left infraclavicular region.

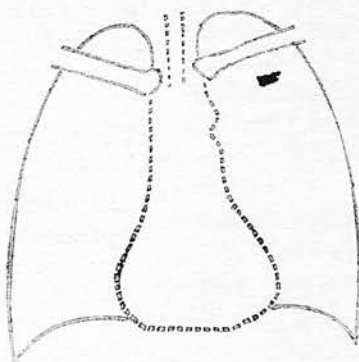
Physical signs: None.

On discharge: General condition fair, wt. 8 st.

E.S.R. 8/25. Sputum none. X-ray: No change.

Treatment: Rest only.

Progress: Dec. 1947: Has remained well.



1.6.44.

Case Nr. 19. Mrs. M.P.

Age: 24. Housewife, married.

Admitted: 11.9.45.

Discharged: 26.4.46.

Family History: Negative, no known contacts.

Housing: Glasgow tenement: 1 aptmt., 2 over 12.

History: After the loss of her baby from gastroenteritis felt run down, loss of weight.

On admission: General condition fair, wt. 8 st. 8 1/2 lbs.

E.S.R. 32/64. Sputum: None, all tests negative.

Occasional rise of temperature to 99° at first.

X-ray: Multiple small foci spreading from right apex.

Physical signs: None.

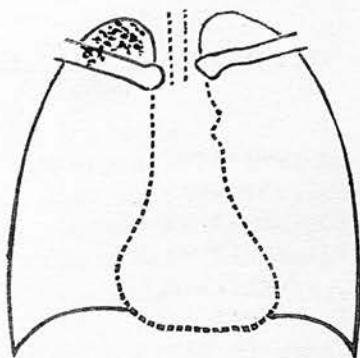
On discharge: General condition good, wt. 9 st. 5 lbs.

E.S.R. 10/28. No sputum. No physical signs.

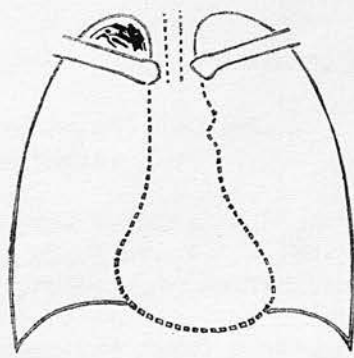
X-ray: lesion contracted and fibrosed.

Rest and Chrysotherapy.

Progress: Nov. 1947: Well. Lesion fibrosed.



11.9.45.



19.3.46.

Case Nr. 20. E.M.

Age: 16.

Not working, single.

Admitted: 11.4.44.

Discharged: 27.7.45.

Family History: Negative. No known contacts.

Housing: Industrial town. Own bed.

History: "Influenza" Nov. 1943, did not recover as expected.

On admission: General condition good, wt. 8 st. 1 1/2 lbs.

E.S.R. 7/15. Sputum: None, all tests negative.

Afebrile.

X-ray: An ill defined patch of infiltration in the upper part of the left mid-zone. Thickened pleura left base and apex.

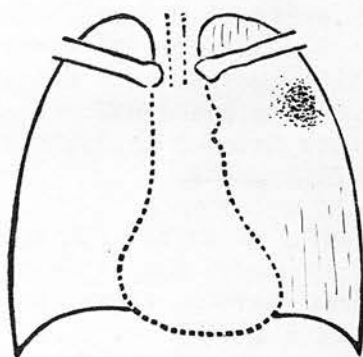
Physical signs: None.

On discharge: General condition good, wt. 7 st. 12 lbs.

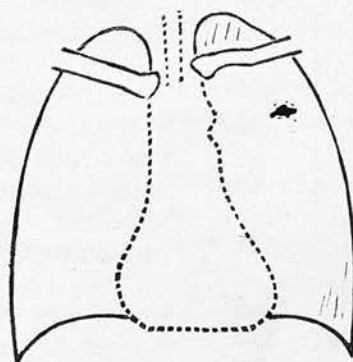
E.S.R. 4/10. No sputum.

X-ray: Had shown steady improvement, leaving a small well defined lesion.

Treatment: Rest only. A.P. attempted, but pleura adherent.
Progress: Nov. 1947: Well, no change in X-ray, considered arrested.



15.4.44.



26.4.45.

Case Nr. 21. Mrs. C.C.

Age: 26. Shop assistant, married.

Admitted: 16.2.43.

Discharged: 22.1.44.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, own bed.

History: Lassitude since stillbirth 3 yrs. before.

On admission: General condition poor, wt. 7 st. 4 1/2 lbs.
E.S.R. 62/96., anaemia present, Sputum scanty,
negative to all tests.

Pyrexial up to 101° during the first weeks.

X-ray: A small exudative lesion in the left mid-zone.

Physical signs: Crepitations over left mid-zone.

On discharge: General condition good, wt. 10 st. 7 lbs.

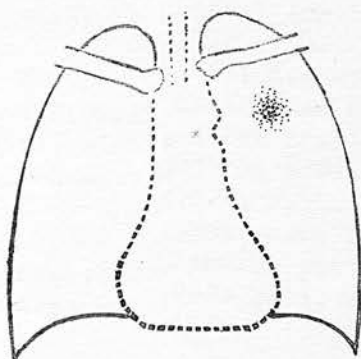
E.S.R. 20/52., never fell to normal. Sputum none.

X-ray: Only a small circumscribed nodule left mid-zone

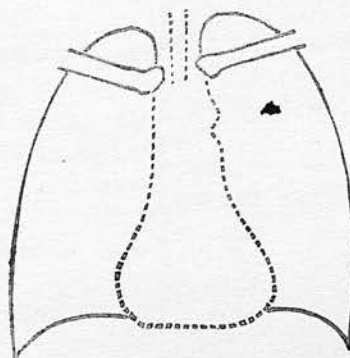
Physical signs: None.

Treatment: Rest only.

Progress: No follow-up records available.



23.2.43.



17.11.43.

Case Nr. 22. E.M.

Age: 21. Nurse, single.

Admitted: 5.3.43.

Discharged: 17.5.43.

Family History: Negative, no Tuberculosis nursing.

Housing: Satisfactory.

History: Dry Pleuresy 1941, loosing weight and feeling tired 4 mths.

Cough and morning sputum with slight staining twice.

On admission: General condition good, wt. 9 st.

E.S.R. 8/21. Sputum scanty, none after first week,
negative to all tests. Afebrile.

X-ray: Nil definite, a doubtful streaky area above right hilum.

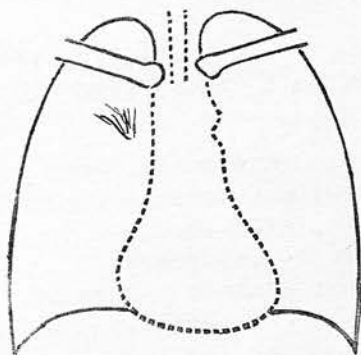
Physical signs: None.

On discharge: General condition good, wt. 9 st. 5 lbs.

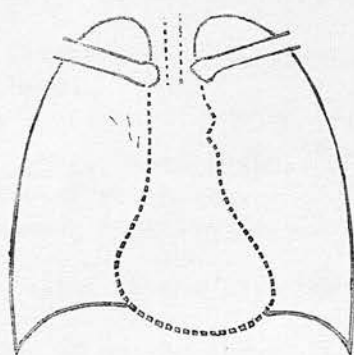
E.S.R. 6/16. No sputum. X-ray: Complete clearing.

Treatment: Rest only.

Progress. Nov. 1947: Well, X-ray clear.



8.3.43.



5.5.43.

Case Nr. 23. E. McG.

Age: 19. Clerkess, single.

Admitted: 17.10.44.

Discharged: 11.7.45.

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Developed cough in Feb. 1944, this did not clear, lassitude

On admission: General condition fair, wt. 7 st. 7 lbs.

E.S.R. 9/20. Sputum scanty, soon stopped, negative
to all tests. Temperature up to 99.5 in first weeks.

X-ray: Pleural thickening and multiple small foci at both apices.

Physical signs: A few crepitations at both apices.

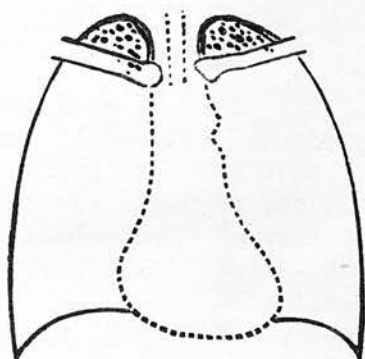
On discharge: General condition good, wt. 8 st. 4 lbs.

E.S.R. 8/18. No sputum. No physical signs.

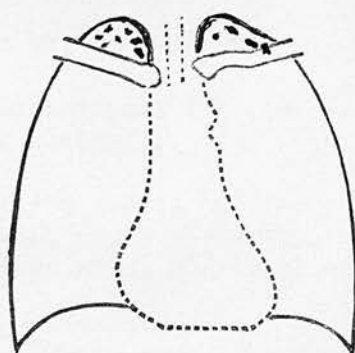
X-ray shows some improvement.

Treatment: Rest and Chrysotherapy.

Progress: Nov. 1947: Well, no symptoms, lesions calcifying.



19.10.44.



24.11.47.

Case Nr. 24. Mrs. J. McF.

Age: 30. Crane driver, married.

Admitted: 10.6.43.

Discharged: 27.11.43.

Family History: Father died of Pul. Tuberc.

Housing: Glasgow tenement, 2 apts., 3 over and 2 under 12, shared bed.

History: Cough and occasional sputum 6 mths. Haemoptysis.

On admission: General condition poor, wt. 7 st. 8 lbs.

E.S.R. 13/31. Sputum scanty, negative to all tests.
Afebrile.

X-ray: Streaking upwards from an old lesion at the left hilum.

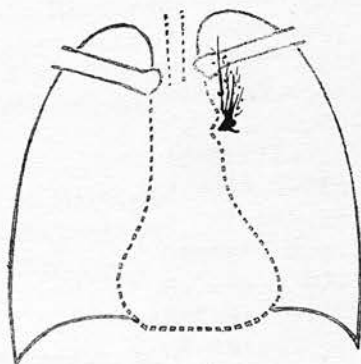
Physical signs: None.

On discharge: General condition fair, wt. 8 st. 10 lbs.

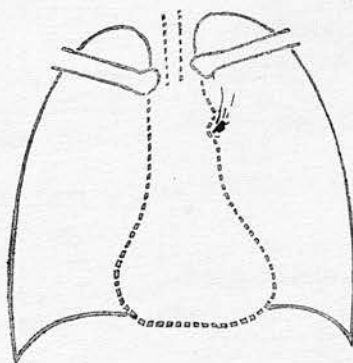
E.S.R. 3/10. Sputum none. X-ray shows clearing.

Treatment: Rest only.

Progress: Dec. 1944: Well, not heard of since, considered arrested.



15.6.43.



27.10.43.

Case Nr. 25. J.H.

Age: 20. Not working, single.

Admitted: 19.7.43. Discharged: 12.8.43. to go South.

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Pain in the right side of the chest.

On admission: General condition fair, wt. 9 st. 4 lbs.

E.S.R. 28/48. Sputum none, all tests negative.
Afebrile.

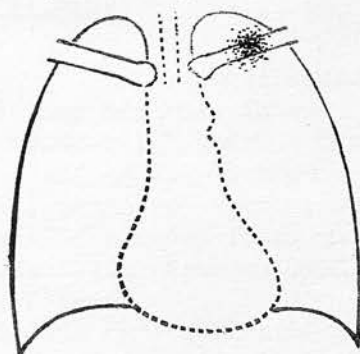
X-ray: Exudative lesion behind left clavicle.

Physical signs: None.

On discharge: Little change in condition, E.S.R. 12/30.

Treatment: Rest only.

Progress: Went to the South of England. Writes in 1947 that she has been well, no X-rays available. Considered improved.



21.7.43.

Case Nr. 26. A.W.

Age: 23. Brewery worker, single.

Admitted: 8.1.46. Discharged: 17.5.46.

Family History: Mother died of Pul. Tuberc.

Housing: Glasgow tenement, 2 apts., 3 over 12, own bed.

History: Pleurisy left apex Dec. 1945, some loss of weight.

On admission: General condition fair, wt. 8 st.

E.S.R. 10/25. Sputum: None, all tests negative.
Afebrile.

X-ray: Multiple well defined foci at left apex, partly calcified.

Physical signs: Crepitations at left apex.

On discharge: General condition good, wt. 8 st. 4 lbs..

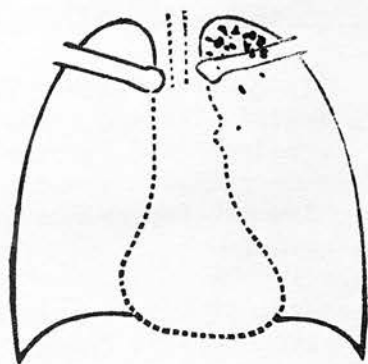
E.S.R. 4/20. No sputum. No physical signs.

X-ray: Lesions harder than before.

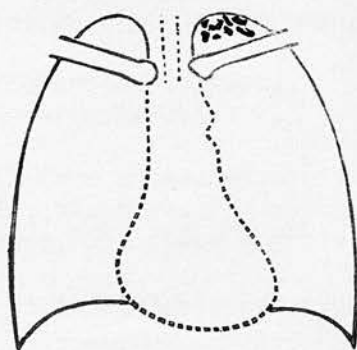
Treatment: Rest only.

Progress: Dec. 1947: Very well, wt. 8 st 4 lbs.

X-ray: Calcified lesions at left apex only.



8.1.46.



2.12.47.

Case Nr. 27. Mrs. E.S.

Age: 32. Optical worker, married.

Admitted: 6.7.44.

Discharged: 26.10.45.

Family History: Father has Pul. Tuberc.

Housing: Glasgow tenement, 1 aptmt., 2 over 12, shares bed.

History: Tiredness and aching tightness in chest 3 mths. before admission, cough and sputum, haemoptysis.

On admission: General condition fair, wt. 7 st. 3 lbs.

E.S.R. 5/12. Sputum: Positive, disappearing soon. Afebrile.

X-ray: Lesion radiating out from right hilum, partly fibrosed.

Physical signs: A few crepitations.

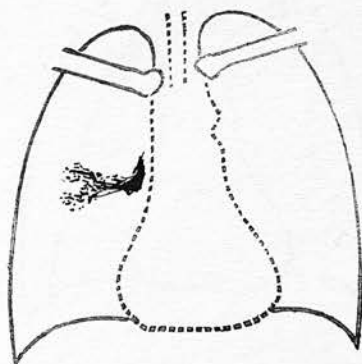
On discharge: General condition good, wt. 7 st. 12 lbs.

E.S.R. 5/12. No sputum. No physical signs.

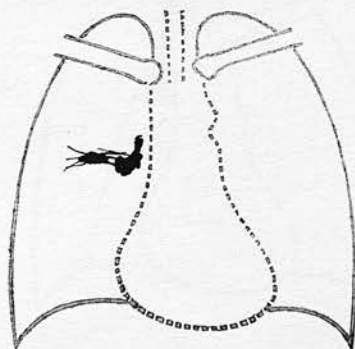
X-ray: Some initial spread of lesion, then gradually regressing, becoming better defined.

Treatment: Rest. Phrenic crush, A.P. failed. Chrysotherapy.

Progress: Pregnancy 1947. Well, Aug. 1947: No change in X-ray, lesion still prominent. Considered quiescent.



8.7.44.



9.10.45.

Case Nr. 28. Mrs. E. McA.

Age: 26.

Moulder, married.

Admitted: 6.8.45.

Discharged: 26.4.46.

Family History: Father died probably of Tuberculosis.

Housing: Satisfactory.

History: Pleurisy on right 3 mths, before admission.

On admission: General condition fair, wt. 8 st.

E.S.R. 2/5. Sputum: None, all tests negative.

Afebrile.

X-ray: Large exudative foci in right infraclavicular region.

Physical signs: None.

On discharge: General condition good, wt. 8 st 10 lbs.

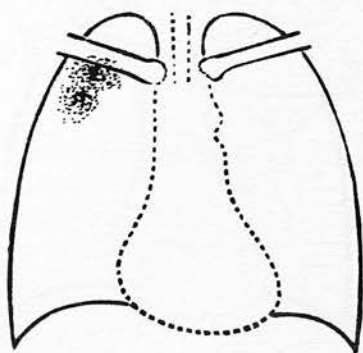
E.S.R. 2/5, never raised. Sputum none.

X-ray: Second film showed an increase in the lesion, marked fluiffiness. A.P. was induced, lesion improved, gradually fibrosing.

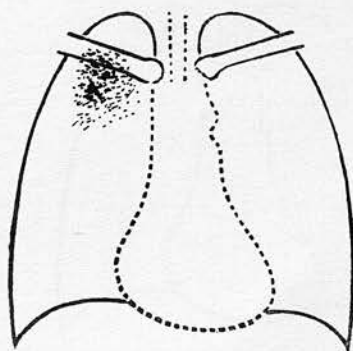
Treatment: Rest, Artificial Pneumothorax, after the lesion had progressed.

Progress: March 1947: Well, wt 8 st. 2 lbs. A.P. kept up.

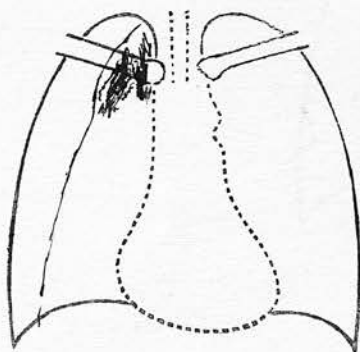
Fibrosis and calcification of lesion. Quiescent.



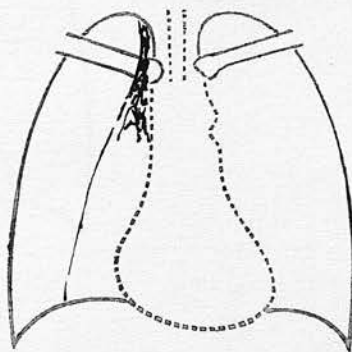
7.8.45.



15.1.46.



26.2.46.



8.3.47.

Case Nr. 29. W.C.

Age: 20. Shop assistant, single.

Admitted: 6.4.45.

Discharged: 28.9.45.

Family History: Negative, no known contacts.

Housing: Own bed.

History: Fatigue and lassitude 12 mths., some cough.

On admission: General condition good, wt. 8 st. 6 lbs.

E.S.R. 3/10, later 15/32 and 16/36. Sputum scanty,
negative to all tests. Afebrile.

X-ray: Multiple small foci at apex and behind clavicle on right.

Physical signs: A few crepitations at right apex.

On discharge: General condition good, wt. 9 st. 3 lbs.

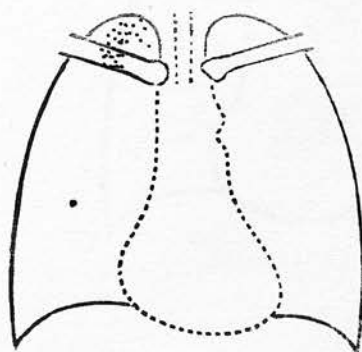
E.S.R. 4/12. Sputum none, Occasional cough.

X-ray: Little change, lesion somewhat better defined.

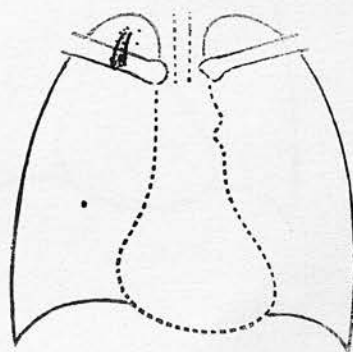
No physical signs.

Treatment: Rest only.

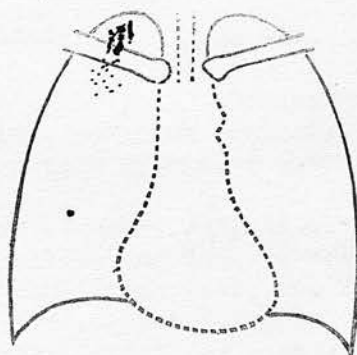
Progress: Dec. 1947: Fairly well, wt. 8 st. 6 lbs. Some cough, no
sputum. X-ray shows some extension of infiltration, but
also some more calcification. Recent improvement.



10.4.45.



11.9.45.



2.12.47.

Case Nr, 30. J.G.

Age: 15.

Shop assistant, single.

Admitted: 30.10.45.

Discharged: 15.12.45.

Family History: One brother and one sister Pul. Tuberc.

Housing: Glasgow tenement, 3 aptmts., 6 over 12, shares bed.

History: "Congestion" of lungs April 1945, X-rayed as contact.

On admission: General condition fair, wt. 6 st. 13 lbs.

E.S.R. 5/15. Sputum: None, all tests negative.

Afebrile.

X-ray: Streaking in left mid-zone.

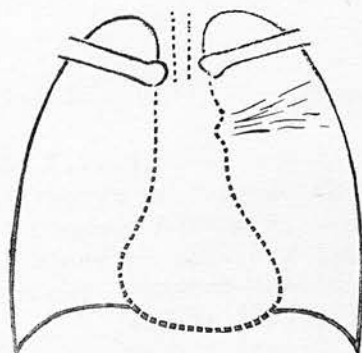
Physical signs: None.

On discharge: Little change, wt. 7 st. 2 lbs. E.S.R. 5/12.

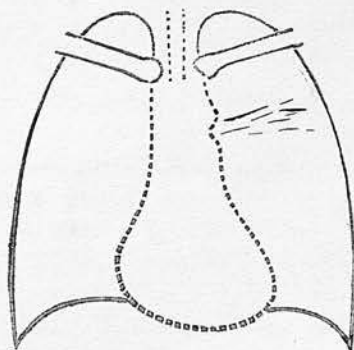
X-ray: No change. No physical signs.

Treatment: Rest only.

Progress: Nov. 1947: Well, wt. 7 st. 2 lbs. X-ray clear.



30.10.45.



15.12.45.

Case Nr, 31. Mrs. J.F.

Age: 36.

Housewife, married.

Admitted: 1.5.45.

Discharged: 14.12.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 aptmts, 2 over and 4 under 12, shares bed.

History: Pain left side of chest July 1944. Haemoptysis Oct. and Dec. 44. Lassitude and loss of weight.

On admission: General condition: poor, wt. 8 st.

E.S.R. 25/47. Sputum scanty, negative to all tests.

Some pyrexia first few weeks.

X-ray: Exudative lesion at left apex and behind clavicle.

Physical signs: Harsh breathsounds and a few crepitations left apex.

On discharge: General condition good, wt. 9 st. 4 lbs.

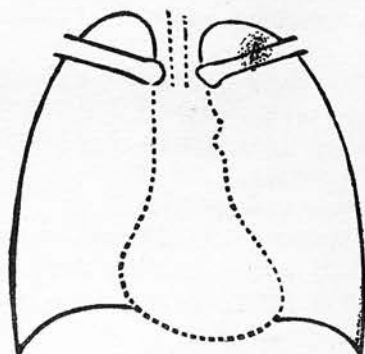
E.S.R. 4/6. No sputum. No physical signs.

X-ray: Lesion gradually contracted.

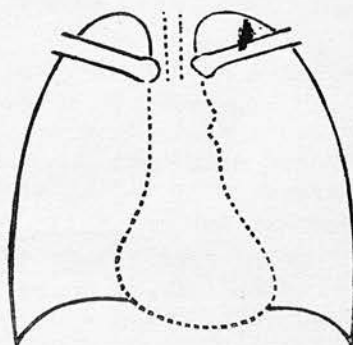
Treatment: Rest only.

Progress: Nov. 1947: Well, wt. 9 st. 7 lbs. no symptoms.

X-ray: Small area of fibrosis at the extreme apex.



1.5.45.



24.11.47.

Case Nr. 32. S.G.

Age: 22

Munition worker, single.

Admitted: 1.9.44.

Discharged: 4.10.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 apts., 4 over 12, own bed.

History: Pleurisy with dry cough March 1944, loss of weight.

On admission: General condition good, wt. 8 st. 4 1/2 lbs.

E.S.R. 16/38, later 23/50. Sputum: None, negative to all tests. Afebrile.

X-ray: Ill defined infiltrate in upper part of left mid-zone.

Physical signs: Slightly diminished movement and few creps.

On discharge: General condition good, wt. 9 st. 1 lb.

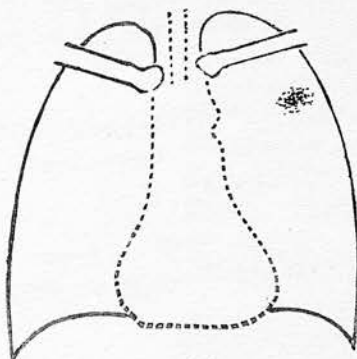
E.S.R. 6/13. No sputum.

X-ray: Little change in first 3 mths, then A.P. induced, gradual fibrosis, pleural effusion later.

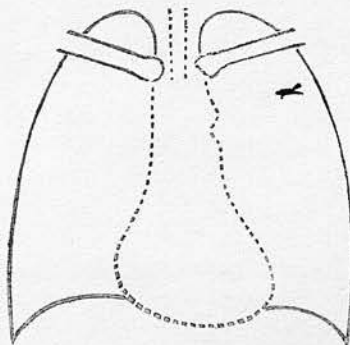
Treatment: Artificial Pneumothorax after threemonths rest.

Progress: A.P. given up because of effusion. Nov. 1947: Well, wt.

8 st. 13 lbs. X-ray: Only a small streak at site of lesion



2.9.44.



24.11.47.

Case Nr. 33. J.C.

Age: 19.

Cashgirl, single.

Admitted: 10.2.44.

Discharged: 5.10.44.

Family History: Negative. no known contacts.

Housing: Glasgow tenement, 3 apts., 7 over and 1 under 12,
Shares bed.

History: Pleurisy with effusion Feb. 1943, in hospital until Dec.,
2 months later pain in right side of chest.

On admission: General condition fair, wt. 8 st. 2 lbs.

E.S.R. 15/43. Sputum: None, all tests negative.

Temperature often up to 99° during first weeks.

X-ray: Indefinite streaking below left hilum, hidden by heart.

Physical signs: A few fine crepitations at the left base.

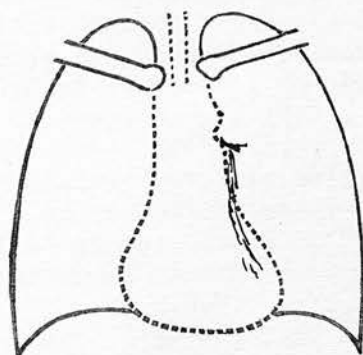
On discharge: General condition good, wt. 8 st. 3 lbs.

E.S.R. 7/12. No sputum. No physical signs.

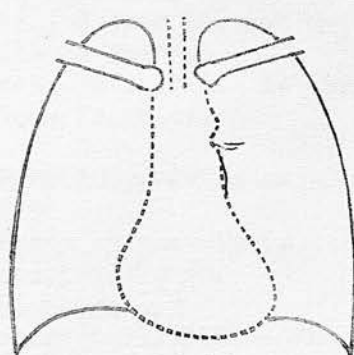
X-ray clear.

Treatment: Rest only. A.P. failed due to adherent pleura.

Progress: Nov. 1947: Well, working full-time, X-ray clear.



16.2.44.



4.10.44.

Case Nr. 34. J.McC.

Age: 22.

WAAF, single.

Admitted: 20.12.44.

Discharged: 29.6.45.

Family History: One cousin died of Pul. Tuberc., slight contact.

Housing: Satisfactory.

History: Lassitude and weakness for one year.

On admission: General condition good, wt. 10 st.

E.S.R. 9/16. Sputum none, all tests negative.

Physical signs: None.

X-ray: Exudative lesion below left clavicle.

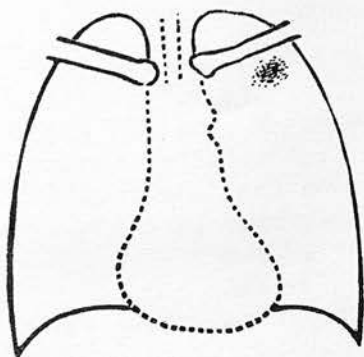
On discharge: General condition good, wt. 10 st 6 lbs.

E.S.R. 3/10. No sputum.

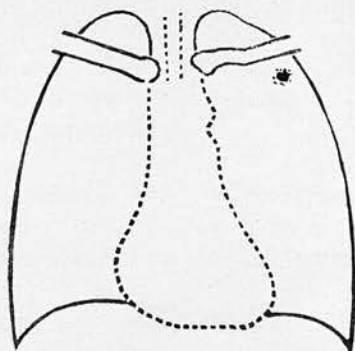
X-ray: Lesion better defined.

Treatment: Rest only.

Progress: Nov. 1947: Well, lesion smaller and harder.



20.12.44.



24.11.47.

Case Nr. 35. Mrs. M.F.

Age: 26. Housewife, married.

Admitted: 1.5.44.

Discharged: 2.2.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 aptmts., 3 over 12, own bed.

History: Spontaneous Pneumothorax, some cough.

On admission: General condition good, wt. 10 st. 13 lbs.

E.S.R. 17/35. Sputum: Positive.

Afebrile.

X-ray: Fairly complete collapse right lung, evidence of multiple small foci at apex.

Physical signs: Those of Pneumothorax on the right.

On discharge: General condition good, wt. 13 st.

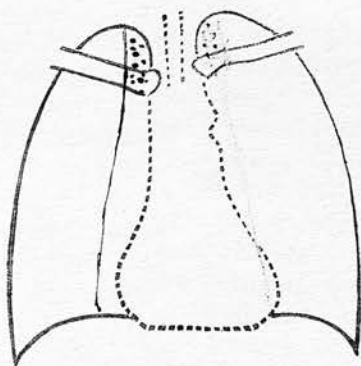
E.S.R. 6/12. Sputum none.

X-ray, Lung expanding at base, lesion fibrosing.

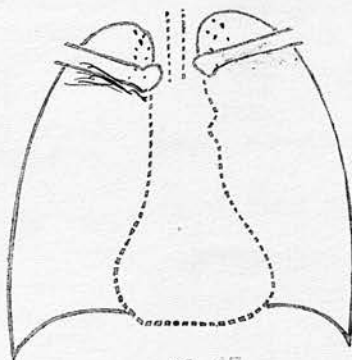
Treatment: Rest, Pneumothorax maintained.

Progress: May 1947: Well, No symptoms, wt. 13 st. 13 lbs.

X-ray: Lung fully expanded, only strands of fibrosis below right clavicle.



3.5.44.



24.11.47.

Case Nr. 36. A.S.

Age: 23. Housekeeper, single.

Admitted: 7.7.43.

Discharged: 16.1.44

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Cough and sputum for many mths., loss of weight.

On admission: General condition poor, wt. 8 st. 2 lbs.

E.S.R. 9/22. Sputum: Positive on culture.

Afebrile.

X-ray: Early lesion below and behind left clavicle.

Physical signs: None.

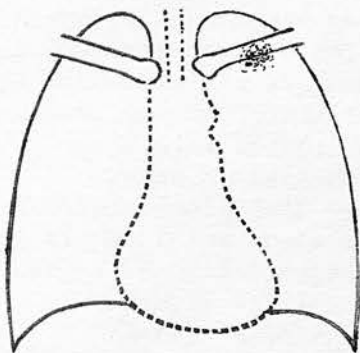
On discharge: General condition fair, wt. 9 st. 12 lbs.

E.S.R. 6/12. Sputum scanty, negative.

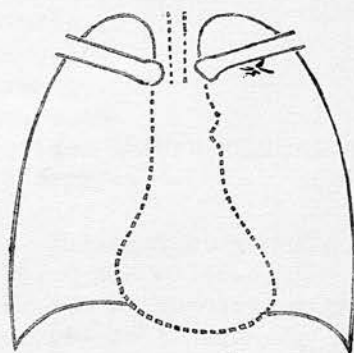
X-ray: Lesion gradually clearing.

Treatment: Rest only.

Progress: Nov. 1947: Well, wt. 9 st. 12 lbs. Still slight cough and sputum. X-ray shows only slight markings below left clavicle.



9.7.43.



24.11.47.

Case Nr. 37. M.G.

Age 29. House keeper, single.

Admitted: 13.7.43.

Discharged: 29.10.43.

Family History: Negative, no known contacts.

Housing: Lanarkshire industrial town, own bed.

History: Has always been "delicate". Pain in back Aug. 1942.

On admission: General condition poor, wt. 7 st. 9 lbs.

E.S.R. 5/15. Sputum: None, all tests negative.

Afebrile.

X-ray: lesions which appear fibrosed in right upper zone up to apex.

Physical signs: None.

On discharge: General condition good, wt. 9 st. 2 lbs.

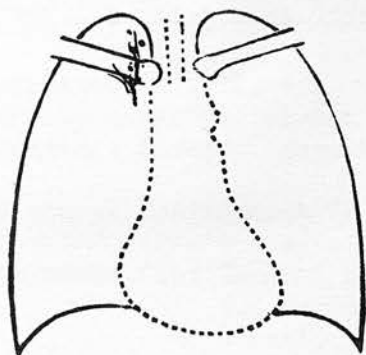
E.S.R. 3/8. Sputum none. No physical signs.

X-ray: Little change.

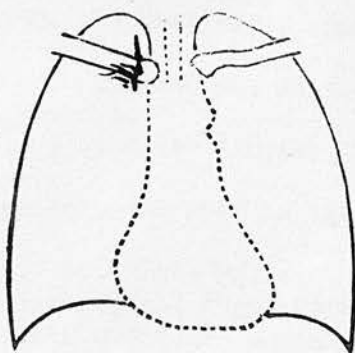
Treatment: Rest only.

Progress: Hard cough and debility every winter since discharge,

Nov. 1947: Some loss of weight. X-ray shows only a hard shadow below and behind the right clavicle.



14.7.43.



24.11.47.

Case Nr. 38. M. McC.

Age: 20. Shorthand typist, single.

Admitted: 18.9.44.

Discharged: 10.3.45.

Family History: Negative, no known contacts.

Housing: 3 apts, 4 over 12, room to herself.

History: Pneumonia and empyema many years ago.

On admission: General condition good, wt. 9 st.

E.S.R. 18/36. Sputum: Positive before admission,
none since admission. Afebrile.

X-ray: Multiple small foci at left apex.

Physical signs: A few creps at left apex. Enlarged cervical glands.

On discharge: General condition good, wt. 8 st. 9 lbs.

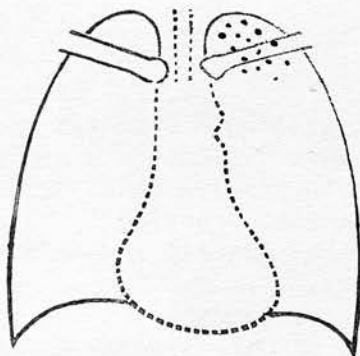
E.S.R. 3/12. Sputum: None. No physical signs.

X-ray: Little change, opacities well defined.

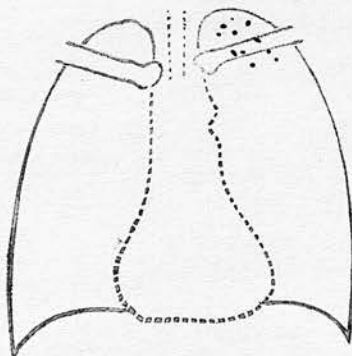
Treatment: Rest and Chrysotherapy.

Progress: Nov. 1947: Well, Working full-time, married.

X-ray appearances unchanged.



20.9.44.



18.11.47.

Case Nr. 39. Mrs. M.L.

Age: 20. Housewife, married.

Admitted: 17. 12. 46.

Discharged: 24.4.47.

Family History: Sister died of Pul. Tuberc.

Housing: Glasgow tenement, 2 aptmts., 5 over and 1 under 12, shares bed.

History: Confinement Sept. 1946, Lassitude and pain in the shoulder afterwards.

On admission: General condition good, wt. 7 st. 6 lbs.

E.S.R. 45/73. Sputum: None, all tests negative.

Occasional rise of temperature to 99°.

X-ray: Multiple small foci at right apex.

Physical signs: Some change in breathsounds at the right apex.

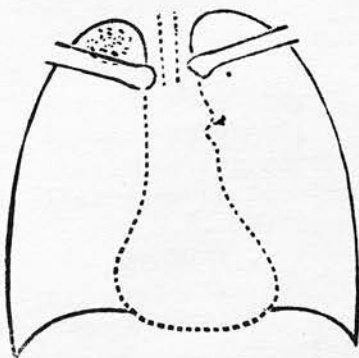
On discharge: General condition good, wt. 8 st. 2 lb.

E.S.R. 6/13. Sputum none. No physical signs.

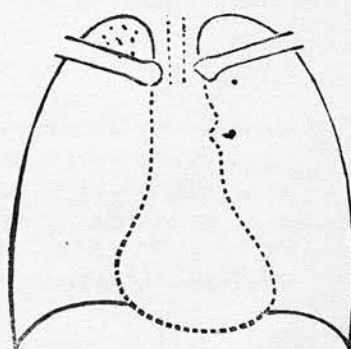
X-ray shows gradual clearing of lesion.

Treatment: Rest only.

Progress: Nov. 1947: Well, wt. 8 st. 4 lb. X-ray shows improvement



17.12.46.



18.11.47.

Case Nr. 40. C.L.

Age: 25. Not working, single.

Admitted: 2.11.43.

Discharged: 26.1.44.

Family History: Negative, no known contacts.

Housing: 2 aptmts., 2 over and 2 under 12. Own bed.

History: Three attacks of cough and pleurisy. Bloodstreaked sputum, Lassitude, loss of weight.

On admission: General condition fair, wt. 9 st. 2 lbs.

E.S.R. 5/7. Sputum: Scanty, negative to all tests.

Afebrile.

X-ray: A vague shadow in the left infra-clavicular region.

Physical signs: Poor expansion and some creps left upper zone.

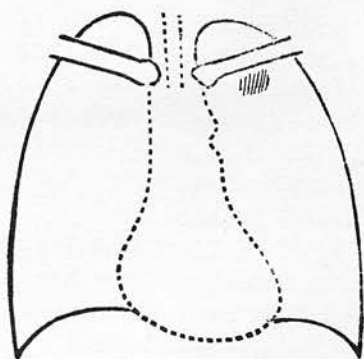
On discharge: General condition good, wt. 10 st. 2 lbs.

E.S.R. 4/10. Sputum none. No physical signs.

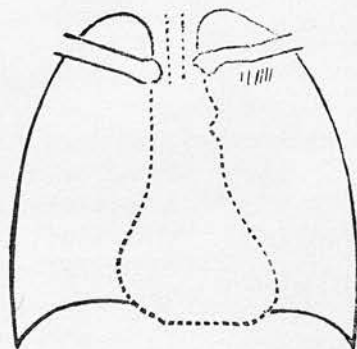
X-ray: Shows almost complete clearing.

Treatment: Rest only.

Progress: Nov. 1947: Poor general condition, wt. 9 st. 7 lbs.
Married 1944. X-ray shows complete clearing. Poor
general condition almost certainly not due to Tuberculosis



13.11.43.



8.1.44

Case Nr. 41. A.J.

Age: 15. Not working, single.

Admitted: 7.6.44.

Discharged: 28.6.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 3 apts., 4 over 12, own room.

History: Lassitude for several weeks, then dyspepsia.

On admission: General condition fair, wt. 7 st. 4 lbs.

E.S.R. 14/40. Sputum: Scanty, negative to all tests.

Afebrile.

X-ray: Early exudative lesion left infra-clavicular region.

Physical signs: None.

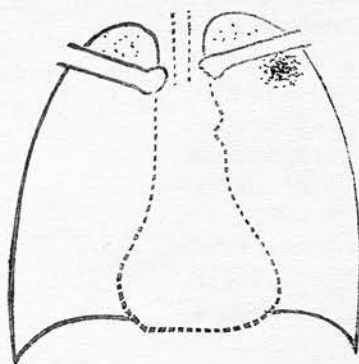
On discharge: General condition good, wt. 8 st. 4 lbs.

E.S.R. 3/10. Sputum none.

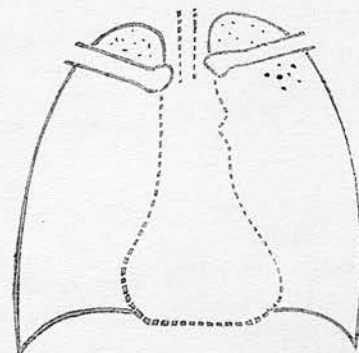
X-ray shows little change, some resolution.

Treatment: Rest and Chrysotherapy.

Progress: Nov. 1947: Well, increase in wt. Working full-time for
one year. X-ray: A few well defined, partly calcified
nodules.



9.6.44.



18.11.47.

Case Nr. 42. C. McL.

Age: 22. Munition worker, single.

Admitted: 4.12.45.

Discharged: 14.6.46.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 aptmts., 5 over 12, shares room.

History: Erythema nodosum 1942, Pleurisy April 1945.

On admission: General condition fair, wt. 7 st. 6 lbs.

E.S.R. 32/50. Sputum: Positive before admission, since then scanty, negative to all tests.

Occasional rise of temperature at the beginning.

X-ray: Small well defined round focus left infra-clavicular region.

Physical signs: None.

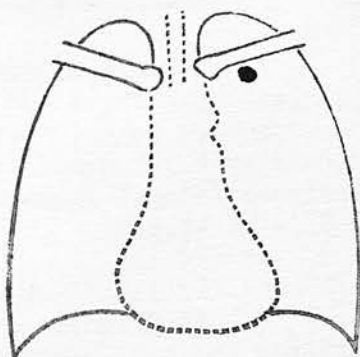
On discharge: General condition fair, wt. 8 st.

E.S.R. 14/32. Sputum none.

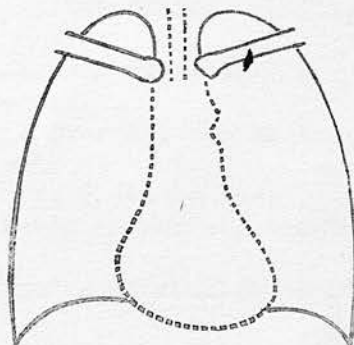
X-ray shows lesion smaller and more defined.

Treatment: Rest only.

Progress: Nov. 1947: Well, married. X-ray shows little change, lesion well defined and hard, contracted upwards.



7.12.45.



10.11.47.

Case Nr. 43. H.S.

Age: 21. Hosiery knitter, single.

Admitted: 9.10.45.

Discharged: 26.4.46.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 2 aptmts., 8 over 12, shares bed.

History: Some lassitude, cough, and digestive symptoms.

On admission: General condition good, wt. 8 st. 5 lbs.

E.S.R. 9/32. Sputum: Scanty, negative to all tests. Afebrile.

X-ray: Infiltration in the left upper zone.

Physical signs: A few crepitations at the left apex.

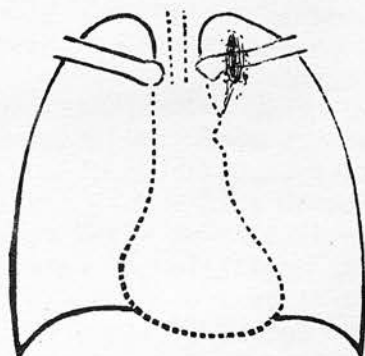
On discharge: General condition good, wt 8 st. 13 lbs.

E.S.R. 3/7. Sputum none. No physical signs.

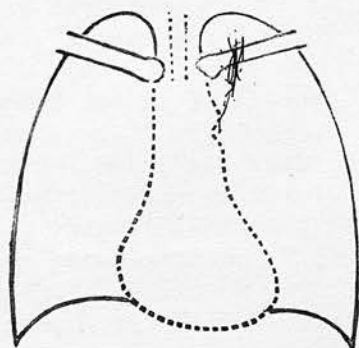
X-ray shows gradual resolution of lesion.

Treatment: Rest only.

Progress: Nov. 1947: Not well, has lost one stone in wt.
X-ray however shows no change. Considered improved only.



9.10.45.



10.11.47.

Case Nr. 44. H.S.

Age : 20. Usherette, single.

Admitted: 11.9.44.

Discharged: 31.5.46.

Family History : Negative, no known contacts.

Housing: Glasgow tenement, 2 aptmts., 6 over 12, shares bed.

History: Cough for some time, loss of weight.

On admission: General condition fair, wt. 7 st. 12 lbs.

E.S.R. 3/8. Sputum: Variable in amount, negative to all tests. Afebrile.

X-ray: Small well defined focus right infra-clavicular region.

Physical signs: None.

On discharge: General condition good, wt. 8 st. 4 lbs.

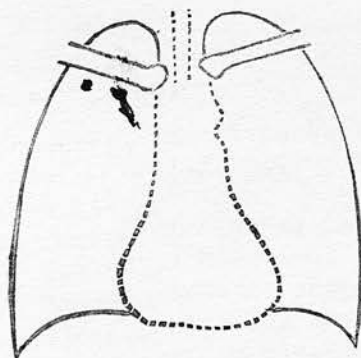
E.S.R. 3/6. Sputum none.

X-ray shows no definite change.

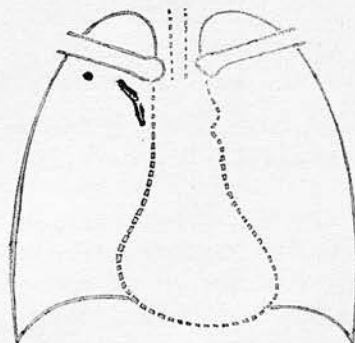
Treatment: Rest only.

Progress: Nov. 1947: Well, no symptoms. wt. 8 st. 9 lbs.

X-ray shows no change.



11.9.45



10.11.47.

Case Nr. 45. M. McK.

Age: 21.

Telephone disinfectant, single

Admitted: 24.9.46.

Discharged: 17.12.46.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 3 apts., 4 over and 1 under 12, shares bed.

History: Pleurisy March 1946, in bed 6 weeks, lassitude.

On admission: General condition good, wt. 7 st. 3 lbs.

E.S.R. 2/10. Sputum: None, all tests negative.

Rise of temperature up to 99.2° at first.

X-ray: Early infiltration left apex, three ill defined foci.

Physical signs: Slight diminution of percussion and a few crepitations at the left apex.

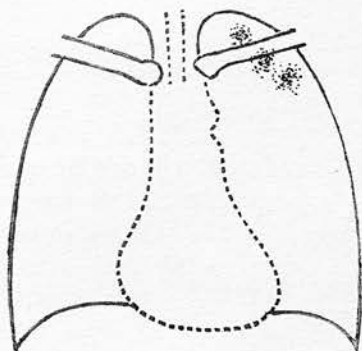
On discharge: General condition good, wt. 7 st. 6 lbs.

E.S.R. 2/5. Sputum none. No physical signs.

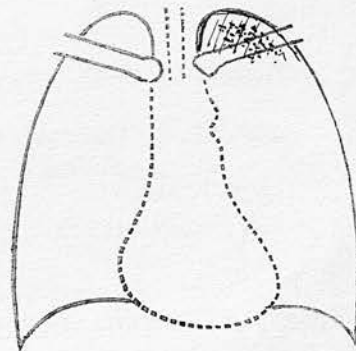
X-ray shows no change.

Treatment: Rest only.

Progress: Nov. 1947: Some loss of wt. lately. Patient worried, but X-ray shows little change except contraction of lesion up to extreme apex. Some thickened pleura. Considered unchanged.



24.9.46.



10.11.47.

Case Nr. 46. M.F.

Age: 29. Nursing Auxiliary, single.

Admitted: 17.3.45.

Discharged: 4.6.45.

Family History: Negative. Nursing in sanatorium wards from 17.11.43. to 21.2.44. and 1.11.44. to 31.1.45.

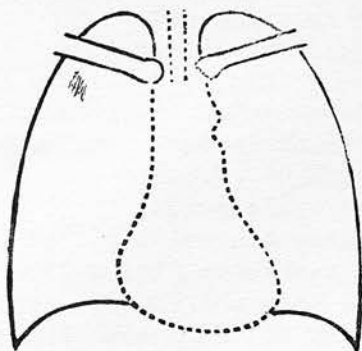
Housing: Satisfactory.

History: Lesion discovered in course of routine X-ray checks. 9.11.43.: negative. 4.3.44: Slightly impaired translucency second right interspace, thought not to be significant, clear again 30.3. and 31.10.44. Opacity recurred and was now larger on 3.2.45. No symptoms.

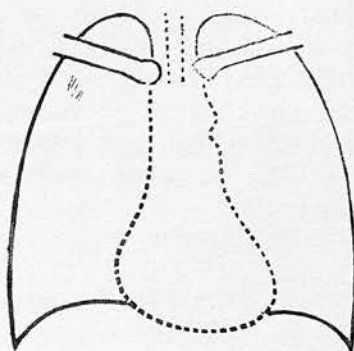
On admission: General condition good. No loss of weight.

E.S.R. 5/12. Sputum: None, all tests negative. Afebrile.

X-ray: Opacity right second interspace slightly more extensive.
Physical signs: None.
On discharge: General condition good. Wt. as before.
E.S.R. 5/12. Sputum none.
X-ray: Opacity less marked.
Treatment: Rest only.
Progress: Well, X-ray cleared completely.



3.2.45.



4.6.45.

Case No. 47. J.B. Age: 17. Shop assistant, single.

Admitted: 6.7.44. Discharged: 26.12.44.
Family History: Negative, no known contacts.
Housing: Satisfactory.
History: Lassitude and occasional pain in the chest, cough and staining Feb. 1944
On admission: General condition good, wt. 10 st. 1 lb.
E.S.R. 16/39. Sputum: Scanty, negative to all tests.

Temperature up to 99.2° during first few weeks.

X-ray: Multiple small foci at both apices in Feb. 1944, on admission only slight mottling at the right apex.

Physical signs: None.

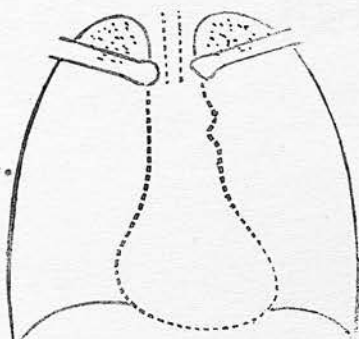
On discharge: General condition good, wt. 9 st. 9 lbs.

E.S.R. 6/19. Sputum none.

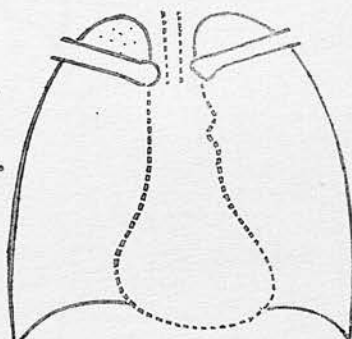
X-ray shows complete clearing of lesion.

Treatment: Rest only.

Progress: Nov. 1947: Well, wt. 9 st. 8 lbs. X-ray clear.



3.2.44.



8.7.44.

Case Nr. 48. A.R.

Age: 21. Not working, single.

Admitted: 1.5.45.

DEED: 29.6.46.

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Routine X-ray when examined for nursing on 4.3.44 showed doubtful streakiness right upper zone. No symptoms then. No physical signs. E.S.R. 6/12. No sputum. Notified. Was quite well for some time, but was not adequately supervised. Axillary abscess Feb. 1945, lassitude, weakness, loss of weight. X-ray in March 1945 showed infiltration of whole of right upper lobe with cavity formation.

On admission: General condition very poor, wt. 6 st. 10 lbs.

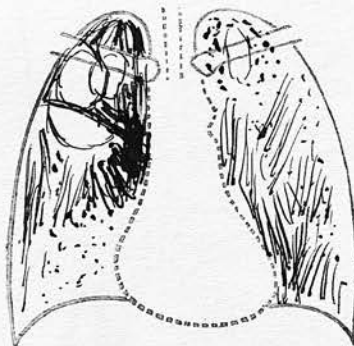
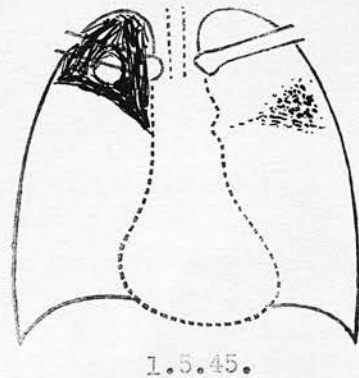
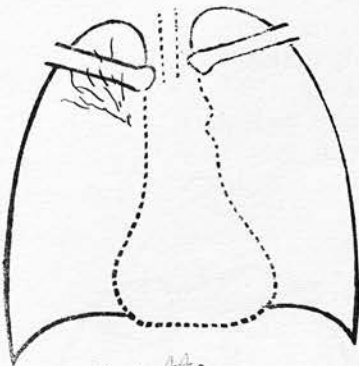
E.S.R. 30/47. Sputum: Positive.

Pyrexial.

X-ray: Infiltration and cavitation right upper zone, also infiltration left mid-zone.

Progress: Steady increase in infiltration, leading to death.

Treatment: Pneumothorax was tried, but failed because of adherent pleura. Rest only.



Case Nr. 49. J.R.

Age: 18.

Typist, single.

Admitted: 1.8.45.

DIED: Oct. 1947. Disch.: 9.3.47.

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Coryza March 1944, in bed 3 weeks, but recovered fully,

X-rayed by mass radiography in June 1945, small lesion.

On admission: General condition fair, wt. 8 st. 5 lbs.

E.S.R. 12/29 and 11/22. Sputum scanty, positive.

Temperature up to 99° during the first month.

X-ray: Early, ill defined infiltration behind right clavicle, also small apical foci.

Physical signs: None.

Progress in hospital: By 11.9.45. a definite spread had occurred, suspicious of commencing cavity formation. Pneumothorax was then induced, but the disease continued to spread, throughout right lung with cavity formation and to left. Rise of temperature which occurred after induction of A.P. settled down again. E.S.R. rose after first weeks.

On discharge: General condition poor, wt. 5 st. 10 lbs.

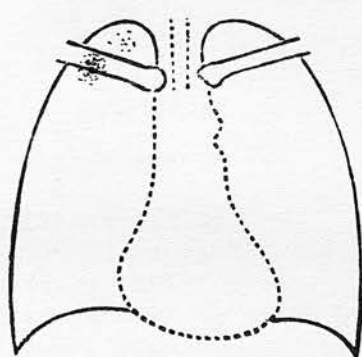
E.S.R. 53/75. Sputum positive.

X-ray: Extensive infiltration and cavitation right lung and left mid-zone.

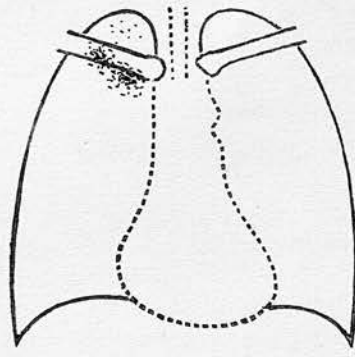
Discharged by agreement with parents as prognosis by this time hopeless and they wanted their only child home.

Treatment: Rest and Pneumothorax.

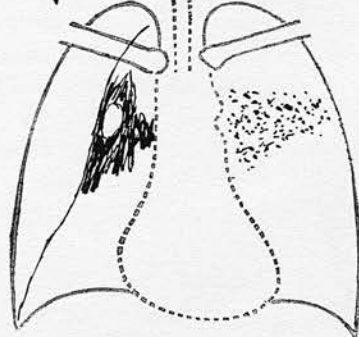
Progress: Continued to deteriorate and died at home in October.



1.8.45.



10.9.45.



20.1.46.

Case Nr. 50. H.P.

Age: 17. Not working, single.

Admitted: 10.1.47.

Discharged: 25.9.47.

Family History: 1 sister died of Pul. Tuberc, 1 sister Pul. Tuberc.

Housing: Satisfactory, own bed.

History: Pleurisy Aug. 1946.

On admission: General condition good, wt. 8 st. 9 lbs.

E.S.R. 20/40. Sputum: None, positive once.
Afebrile.

X-ray: Exudative early lesion left infra-clavicular area.

Physical signs: None.

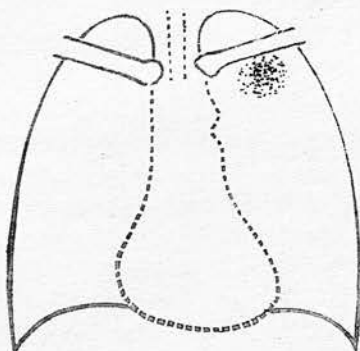
On discharge: General condition good, wt. 9 st.

E.S.R. 16/35. Sputum none. No physical signs.

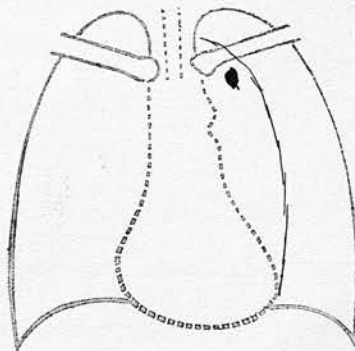
X-ray: Pneumothorax was induced soon and good collapse obtained after adhesion section. Lesion well defined and round.

Treatment: Rest and Pneumothorax.

Progress: Dec. 1947: Continues to progress well.



14.1.47.



19.8.47.

Case Nr. 51. M.F.

Age: 25.

Nursing sister, single.

Admitted: 5.5.45.

Discharged: 29.5.45.

Family History: Negative, Nursing in sanatorium wards for 4 mths.

Housing: Satisfactory.

History: Went on night duty in a heavy surgical ward early in 1945, some loss of weight, some cough. After previous negative X-rays a picture in April showed impaired translucency at the right apex. Also old calcified lesion at hilum.

On 5.5.45 had a perforation of Meckel's diverticulum.

On admission: General condition poor, wt. 8 st. 11b.

E.S.R. not taken because of perforation. Sputum none, all tests negative.

X-ray: Impairment of translucency at right apex, as before.

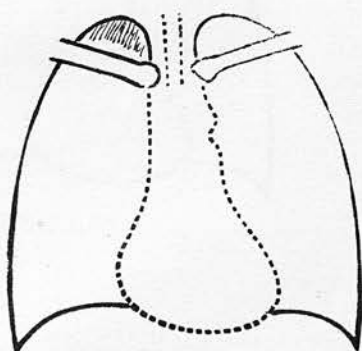
Physical signs: None.

On discharge: General condition fair, wt. 8 st. 2 lbs.

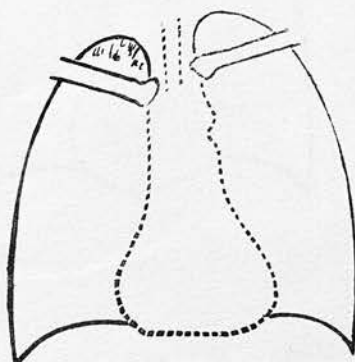
E.S.R. 3/10. Sputum none.

Treatment: Modified rest only.

Progress: September 1945 still some mottling at right apex.
Oct. 1947 X-ray clear, well, wt over 9 st.
Dec. 1948: Well, X-ray clear.



4.4.45.



11.9.45.

Case Nr. 52. E.McJ.

Age: 21.

Not working, single.

Admitted: 10.12.46.

Discharged: 30.9.47.

Family History: Negative, no known contacts.

Housing: Shares bed.

History: Pleurisy and slight staining 8 mths. ago, loss of weight.

On admission: General condition poor, wt. 7 st. 3 lbs.

E.S.R. 6/20 and 15/35. Sputum: None, all tests negat.
Afebrile.

X-ray: Fairly well defined lesion left infra-clavicular region.

Physical signs: Crepitations at the left apex.

On discharge: General condition good, wt. 7 st. 11 lbs.

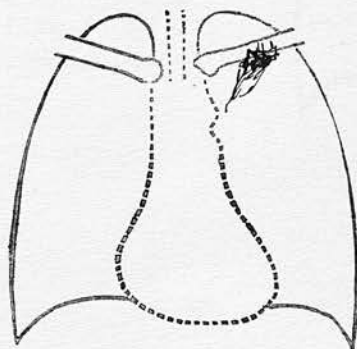
E.S.R. 7/16. Sputum none. No physical signs.

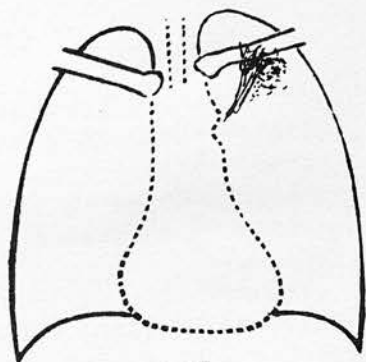
X-ray: Lesion became more extensive first and looked like breaking down. Pneumothorax induced, but not very successful due to adhesions. Lesion however retrogressed and X-ray was almost clear on discharge. A.P. lost after effusion.

Treatment: Rest and Pneumothorax.

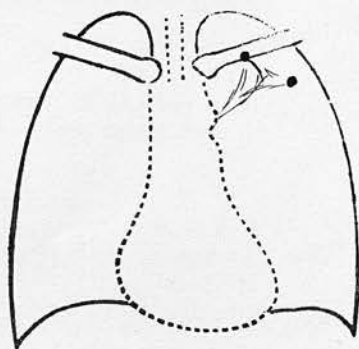
Progress: Dec. 1947: Well, lesion almost cleared.

11.12.46.





18.3.47



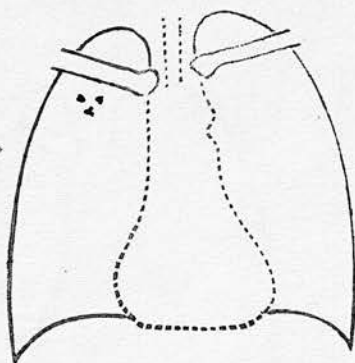
29.10.47.

Case Nr. 53. G.P.

Age: 31.

A.T.S. single.

Admitted: 10.2.42. Discharged: 20.2.42.
 Family History: Negative. No contacts.
 Housing: Satisfactory, own bed.
 History: None of note.
 On admission: Good general condition, 10 st.
 E.S.R. 2/6. No sputum.
 Admitted with ? influenza,
 X-ray showed partly calcified
 lesion in right infra-clavic-
 ular region.
 On discharge: No change.
 Treatment: None thought neccessary.
 Progress: Dec. 1944: No change.



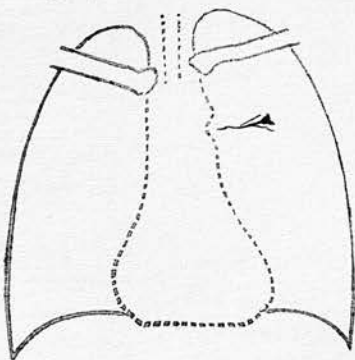
12.2.42.

Case Nr. 54. J.S.

Age: 22.

A.T.S. single.

Admitted: 14.5.42. Discharged: 20.5.42.
 Family History: Negative, no contacts.
 Housing: Fair, own bed.
 History: None of note.
 On admission: General cond. good, 9 st. 6
 E.S.R. 8/12. No sputum.
 X-ray: On routine exam a small
 hard, partly calcified focus in
 left mid-zone, obviously inactive.
 On discharge: No change.
 Treatment: None thought neccessary.
 Progress: Dec. 1944: No change.



16.5.42.

Case Nr. 55. M.F.

Age: 23.

Nursing Auxiliary, single.

Admitted: 23.5.44.

Discharged: 26.7.44.

Family History: Negative. No sanatorium nursing.

Housing: Satisfactory.

History: March 1944 X-ray negative.

On admission: General condition good, wt. 8 st. 4 lbs.

E.S.R. 5/12. Sputum: Negative to all tests. None
Afebrile.

X-ray: Mottling in right infra-clavicular lesion, suggestive of a recent active lesion.

Physical signs: None.

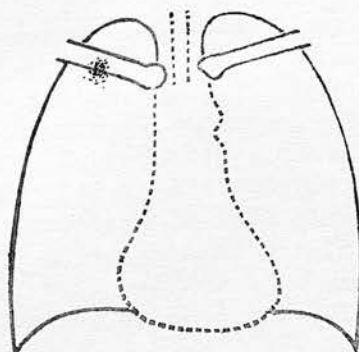
On discharge: General condition good, wt. 8 st. 6 lbs.

E.S.R. 4/10. Sputum none.

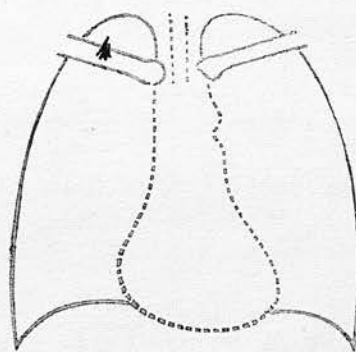
X-ray shows some improvement in lesion.

Treatment: Rest only.

Progress: 7.7.45: well, apical fibrosis only. Similar in Nov. 1947.



23.5.44.



15.11.47.

Case Nr. 56. R.H.

Age: 26.

Chauffeuse, single.

Admitted: 20.2.45.

Discharged: 22.10.45.

Family History: Negative, no known contacts.

Housing: Glasgow tenement, 1 aptm., 2 over 12, own bed.

History: Pleurisy with effusion July 1942, since then pain and lassitude.

On admission: General condition fair, wt. 11 st. 9 lbs.

E.S.R. 11/32. Sputum: Scanty, positive.

Rise of temperature up to 99.2° for first few weeks.

X-ray: Multiple foci extreme left apex, also doubtful small lesion below right clavicle.

Physical signs: None.

On discharge: General condition good, wt. 11 st. 7 lbs.

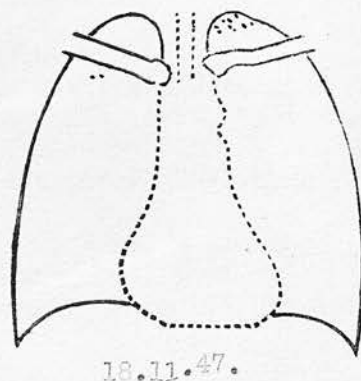
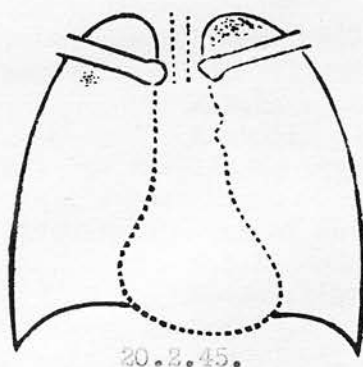
E.S.R. 7/20. Sputum none.

X-ray: Little change.

Treatment: Rest and Chrysotherapy.

Progress: Nov. 1947: Well, wt. 12 st. 8 lbs., working.

X-ray shows a few hard foci only.



Case Nr. 57. L.McK.

Age: 28.

Nurse, single.

Admitted: 15.9.45.

Discharged: 10.1.46.

Family History: Negative, Sanatorium nursing for 6 months.

Housing: Satisfactory.

History: 1943 to 1945 normal X-rays. 28.8.45 well defined shadow noticed in left mid-zone, no symptoms. Later slight loss of weight and lassitude. Developed sciatica; admitted to ward because of this.

On admission: General condition fair, wt. 8 st. 6 lbs.

E.S.R. 5/12. Sputum: None, all tests negative.

Afebrile.

X-ray: Well defined lesion slightly more evident in left mid-zone

Physical signs: None.

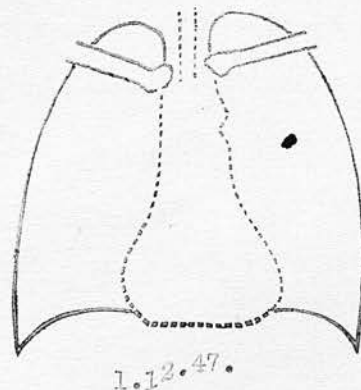
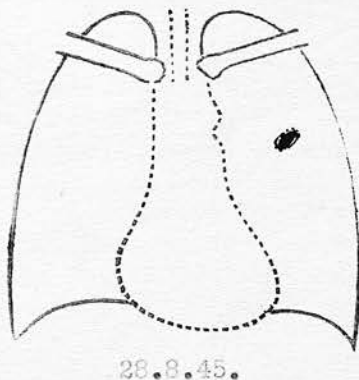
On discharge: General condition fair, wt. 8 st. 8 lbs.

E.S.R. 4/12. Sputum none.

X-ray shows no change.

Treatment: Rest only.

Progress: Dec. 1947: Well, wt. 9 st. Lesion harder and more rounded.



Case Nr. 58. R. McA.

Age: 18.

Cleekess, single.

Admitted: 1.6.47.

Discharged: 22.2.48.

Family History: One sister with pleurisy.

Housing: Own bed.

History: Pleurisy May 1947, some dyspepsia.

On admission: General condition: fair, wt. 7 st. 2 lbs.

E.S.R. 9/26. Sputum: None, all tests negative.
Afebrile.

X-ray: Two small exudative lesions in left infra-clavicular area.

Physical signs: None.

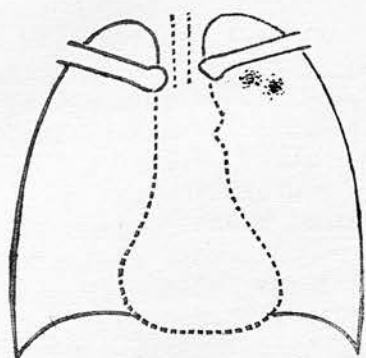
On discharge: General condition good, wt. 7 st. 4 1/2 lbs.

E.S.R. 8/24. Sputum none.

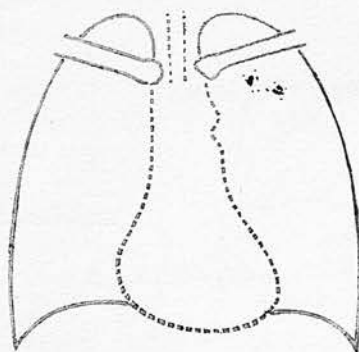
X-ray: Lesions now very small and hardly visible.

Treatment: Rest only.

Progress: Nov. 1948: Well since discharge.



4.6.47.



20.12.47.

Case Nr. 59. M. M.

Age: 16 .

Clerkess, single.

Admitted: 2.9.47.

Discharged: 7.2.48.

Family History: One sister Pul. Tuberc.

Housing: Glasgow tenement, shares bed.

History: No symptoms, was X-rayed as contact.

On admission: General condition fair, wt. 8 st. 3 1/2 lbs.

E.S.R. 12/37 and 20/45. Sputum: None, all tests neg.
Afebrile.

X-ray: Small hard foci at right apex and left infra-clavicular area.

Physical signs: None.

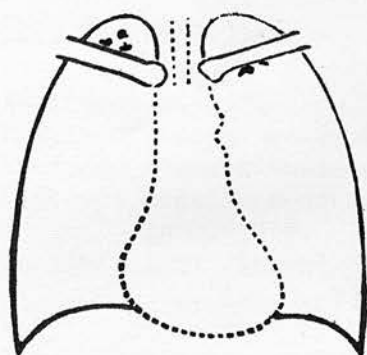
On discharge: General condition good, wt. 9 st. 3 lbs.

E.S.R. 7/22, sputum none.

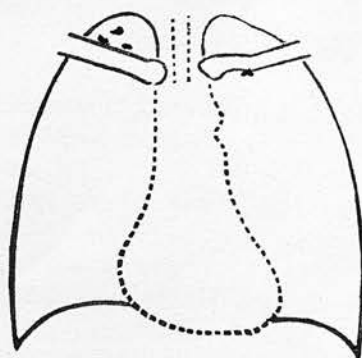
X-ray: Lesions contracted and calcified.

Treatment: Rest only.

Progress: Nov. 1948: No change since discharge.



2.9.47.



20.12.47.

Case Nr. 60. M. McK.

Age: 19. Shop assistant, single.

Admitted: 5.8.47.

Discharged: 25.6.48.

Family History: Two sisters Pul. Tuberc.

Housing: Glasgow tenement, shares bed.

History: Pleurisy March 1947, loss of weight, haemoptysis June 47.

On admission: General condition good, wt. 8 st. 7 1/2 lbs.

E.S.R. 7/23. Sputum : Positive.

Afebrile.

X-ray: Exudative lesion behind left clavicle.

Physical signs: None.

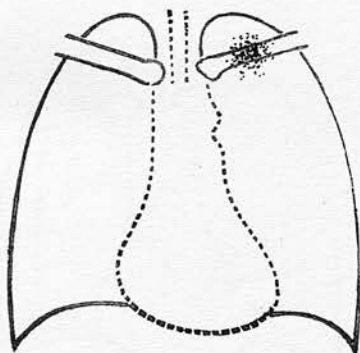
On discharge: General condition good, wt. 8 st. 13 lbs.

E.S.R. 6/10. Sputum none.

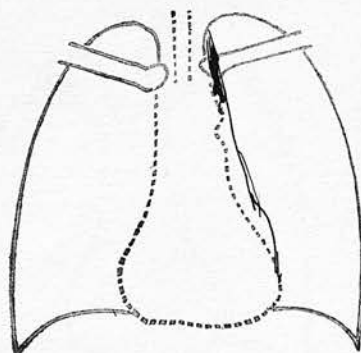
Pneumothorax was induced soon, fair collapse, some effusion after thoracoscopy. Lesion gradually contracted, collapse good after adhesion section.

Treatment: Rest and Pneumothorax.

Progress: Pneumothorax maintained well.



5.8.47.



20.12.47.

Case Nr. 61. A.M.

Age: 22.

Schoolteacher, single.

Admitted: 8.7.47.

Discharged: Still in hospital Dec. 48.

Family History: One sister and brother Pul. Tuberc.

Housing: Glasgow tenement, shares bed.

History: Lassitude with cough and sputum early 1947, haemoptysis April 1947.

On admission: General condition fair, wt. 8 st.

E.S.R. 14/28. Sputum: Scanty, positive.

Rise of temperature to 99.2° at first.

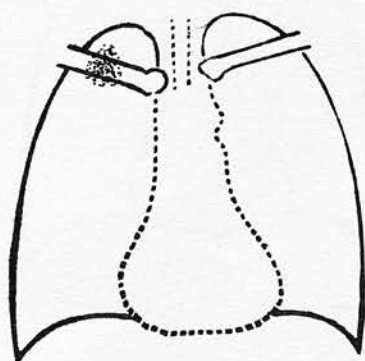
X-ray: Homogenous, but fluffy opacity behind right clavicle.

Physical signs: Crepitations at right apex.

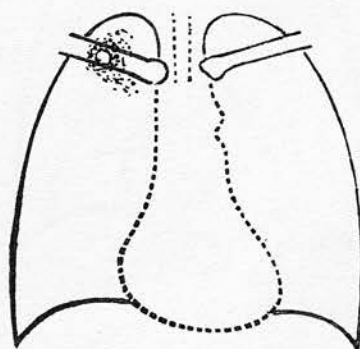
Progress in hospital: Lesion started to break down soon after admission, cavitation developed. Lesion spread towards apex and hilum. Pneumothorax was induced, but rather broad adhesions at apex prevented satisfactory collapse. Phrenic crush. Later A.P. abandoned and Pneumoperitoneum started. Steady improvement after this, but cavity not completely closed. Thoracoplasty considered.

Dec. 1948: General condition good, wt. 9 st. 1 lb.

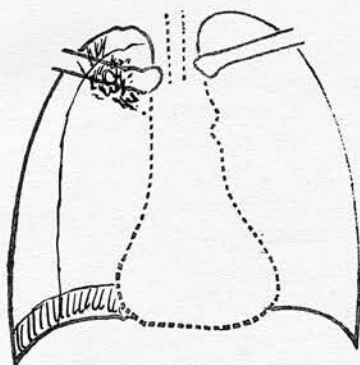
E.S.R. 6/16. Sputum still positive.



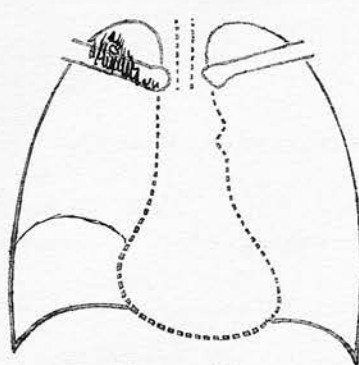
8.7.47.



15.8.47.



20.12.47.



Dec. 48.

Case Nr. 52. G.B.

Age: 23.

cashier, single.

Admitted: 1.8.47.

Discharged: 27.2.48.

Family History: Two sisters Pul. Tuberc.

Housing: Lanarkshire industrial town, shares bed.

History: Always "chesty", lassitude since Feb. 1947. Rather persistent cough and sputum.

On admission: General condition good, wt. 9 st.

E.S.R. 15/32. Sputum: None, negative to all tests. Afebrile.

X-ray: Exudative lesion right apex and behind clavicle.

Physical signs: Crepitations at right apex.

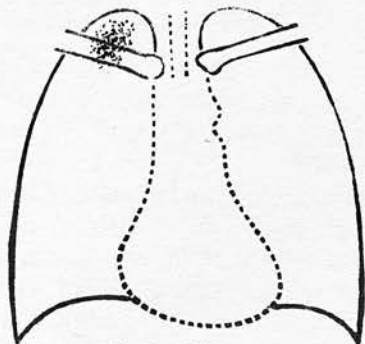
On discharge: General condition good, wt. 9 st. 8 1/2 lbs.

E.S.R. 5/15, sputum none. No physical signs.

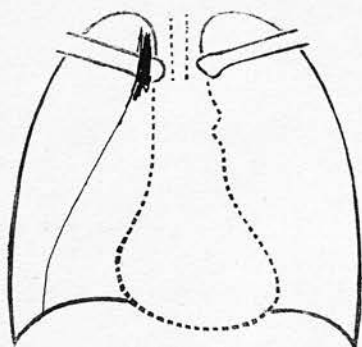
X-ray: Pneumothorax was induced soon and a good collapse obtained, lesion fibrosing.

Treatment: Rest and Pneumothorax.

Progress: Nov. 1948: Well. Pneumothorax maintained, lesion fibrosed.



1.8.47.



20.12.47.

Case Nr. 53. M.B.

Age: 17.

Clerkess, single.

Admitted: 29.7.47.

Discharged: 18.12.47.

Family History: Negative, no known contacts.

Housing: Satisfactory.

History: Lassitude since July 1946, cough since Nov. Resting since January 1947.

On admission: General condition fair, wt. 9 st.

E.S.R. 10/22. Sputum: None, all tests negative. Afebrile.

X-ray: Slightly mottled opacity in right infra-clavicular area.

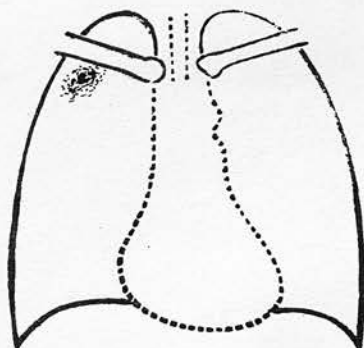
Physical signs: None.

On discharge: General condition good, wt. 9 st. 10 lbs.

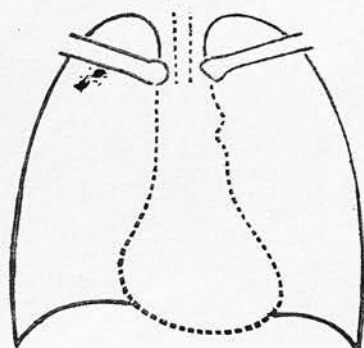
E.S.R. 5/12. Sputum none.

Treatment: Rest only.

Progress: Remains well, X-ray shows lesion smaller and better defined.



11.7.47.



20.12.47.

Case Nr. 64. E.N.

Age: 24

Nurse, single.

Family History: Negative, no sanatorium nursing.

Housing : Satisfactory.

History: No symptoms, picked up through routine X-ray. No previous X-ray. Not admitted to ward. X-ray 3.4.48.

General condition good, wt. 9 st 1 lb.

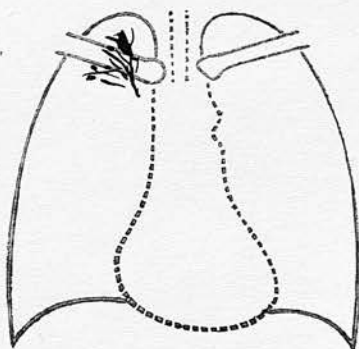
E.S.R. 10/18. Sputum: None, all tests negative.

Afebrile, no physical signs.

X-ray: Streaky fibrosing lesion right apex and infra-clavicular area.

Treatment: Not considered necessary.

Progress: Remained well. May 1949 no change in X-ray. E.S.R. 6/13.



3.4.48.